



Franklin Institute Library

PHILADELPHIA

Class 672.....

Book q. M 83
ed 10

Accession 5149

REFERENCE

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D21.

ARTICLE V.—The Library shall be divided into two classes; the first comprising such works as, from their rarity or value, should not be lent out, all unbound periodicals, and such text books as ought to be found in a library of reference, except when required by Committees of the Institute, or by Members or holders of second class stock, who have obtained the sanction of the Committee. The second class shall include those books intended for circulation.

ARTICLE VI.—The Secretary shall have authority to loan to Members and to holders of second class stock, any work belonging to the SECOND CLASS, subject to the following regulations:

Section 1.—No individual shall be permitted to have more than two books out at one time, without a written permission, signed by at least two members of the Library Committee; nor shall a book be kept out more than two weeks; but if no one has applied for it, the former borrower may renew the loan. Should any person have applied for it, the latter shall have the preference.

Section 2.—A FINE OF TEN CENTS PER WEEK shall be exacted for the detention of a book beyond the limited time; and if a book be not returned within three months it shall be deemed lost, and the borrower shall, in addition to his fines, forfeit its value.

Section 3.—Should any book be returned injured, the borrower shall pay for the injury, or replace the book, as the Library Committee may direct; and if one or more books, belonging to a set or sets, be lost, the borrower shall replace them or make full restitution.

ARTICLE VII.—Any person removing from the Hall, without permission from the proper authorities, any book, newspaper, or other property in charge of the Library Committee, shall be reported to the Committee, who may inflict any fine not exceeding twenty-five dollars.

ARTICLE VIII.—No member or holder of second class stock, whose annual contribution for the current year shall be unpaid or who is in arrears for fines, shall be entitled to the privileges of the Library or Reading Room.

ARTICLE IX.—If any member or holder of second class stock, shall refuse or neglect to comply with the foregoing rules, it shall be the duty of the Secretary to report him to the Committee on the Library.

ARTICLE X.—Any Member or holder of second class stock, detected in mutilating the newspapers pamphlets or books belonging to the Institute, shall be deprived of his right of membership, and the name of the offender shall be made public

672 q. M 83 ed 10

5149

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CCA

THOMAS T. TASKER, JR.

STEPHEN P. M. TASKER.

MORRIS, TASKER & Co.

Illustrated Catalogue.

PASCAL IRON WORKS

PHILADELPHIA.



TENTH EDITION.

June 1st, 1871.

CLASS FIRST.

TASKER IRON WORKS

NEW CASTLE, DEL.

BOILER TUBES.
STEAM, GAS OR WATER TUBES.
WROUGHT AND CAST-IRON FITTINGS.

MANIFOLDS.
COIL FITTINGS.
FLANGES.

RETURN BEND AND WROUGHT-IRON COILS.
GALVANIZED IRON FITTINGS.
GAS FITTINGS.

Works and Office—FIFTH AND TASKER STREETS, Philadelphia.

Office—209 SOUTH THIRD STREET, Philadelphia.

Office and Warehouse—No. 15 GOLD STREET, New York.

Office and Warehouse—No. 36 OLIVER STREET, Boston.

PRINTED BY McLAUGHLIN BROTHERS, BOOK AND JOB PRINTERS, Nos. 112 AND 114 SOUTH THIRD STREET

ILLUSTRATED BY L. HAUGG, No. 45 SOUTH FOURTH STREET

1875.

ENTERED ACCORDING TO ACT OF CONGRESS, IN THE YEAR 1873, BY
MORRIS, TASKER & CO.

IN THE OFFICE OF THE LIBRARIAN OF CONGRESS, AT WASHINGTON, D. C.

PRICE LIST

FOR

MORRIS, TASKER & CO.'S

ILLUSTRATED CATALOGUE.

TENTH EDITION, 1871.

Persons in ordering will please state the "Edition" they order from.

Every order for special articles must have accurate plans and dimensions attached; and no order, "same as before," will be received.
Any article for which no price is quoted on the list will only be made to special order, although such article may be shown in the illustrations.
It is impossible to make tubes of exact internal diameter.

LAP WELDED AMERICAN CHARCOAL IRON BOILER TUBES.

TABLE OF STANDARD DIMENSIONS AND PRICES.

Cut to Specific Lengths to suit Purchasers. Lengths greater than twenty feet at especial rates.

PLATE.
1

External Diameter.	Price, per foot.	PRICE. Each Safe End Extra.	*Standard Thickness.	*Nearest Wire Gauge Thickness.	Internal Diameter.	Internal Circumference.	External Circumference.	†Length of Pipe per square foot of inside surface.	†Length of Pipe per square foot of outside surface.	Internal Area.	External Area.	Weight, per foot.
Inches.	\$ c.	\$ c.	Inches.	Inches.	Inches.	Inches.	Inches.	Feet.	Feet.	Inches.	Inches.	lbs.
1	.30	.15	0.072	15	0.856	2.689	3.142	4.460	3.819	0.575	0.785	0.708
1 1/4	.30	.15	0.072	15	1.106	3.474	3.927	3.455	3.056	0.960	1.227	0.9
1 1/2	.30	.15	0.083	14	1.334	4.191	4.712	2.863	2.547	1.396	1.767	1.250
1 3/4	.30	.17	0.095	13	1.560	4.901	5.498	2.448	2.183	1.911	2.405	1.665
2	.30	.17	0.098	13	1.804	5.667	6.283	2.118	1.909	2.556	3.142	1.981
2 1/4	.34	.19	0.098	13	2.054	6.484	7.069	1.850	1.698	3.314	3.976	2.238
2 1/2	.38	.21	0.109	12	2.283	7.172	7.854	1.673	1.528	4.094	4.909	2.755
2 3/4	.42	.24	0.109	12	2.533	7.957	8.639	1.508	1.390	5.039	5.940	3.045
3	.50	.27	0.109	12	2.783	8.743	9.425	1.373	1.273	6.083	7.069	3.333
3 1/4	.54	.30	0.119	11	3.012	9.462	10.210	1.268	1.175	7.125	8.296	3.958
3 1/2	.60	.33	0.119	11	3.262	10.248	10.995	1.171	1.091	8.357	9.621	4.272
3 3/4	.75	.36	0.119	11	3.512	11.033	11.781	1.088	1.018	9.687	11.045	4.590
4	.90	.39	0.130	10	3.741	11.753	12.566	1.023	0.955	10.992	12.566	5.320
4 1/2	1.12	.43	0.130	10	4.241	13.323	14.137	0.901	0.849	14.126	15.904	6.010
5	1.35	.50	0.140	9 1/2	4.72	14.818	15.708	0.809	0.764	17.497	19.635	7.226
6	1.80	.61	0.151	9	5.699	17.904	18.849	0.670	0.637	25.509	28.274	9.346
7	2.25	.	0.172	7 1/2	6.657	20.914	21.991	0.574	0.545	34.805	38.484	12.435
8	3.38	.	0.182	7	7.636	23.989	25.132	0.500	0.478	45.795	50.265	15.109
9	.	.	0.193	6 1/2	8.615	27.055	28.274	0.444	0.424	58.291	63.617	18.002
10	.	.	0.214	5 1/2	9.573	30.074	31.416	0.399	0.382	71.975	78.540	22.19

* The thickness of Tube can be varied to order, at prices dependent upon the thickness and number of feet wanted.

† In estimating the effective steam-heating or boiler surface of Tubes, the surface in contact with air or gases of combustion (whether internal or external to the Tubes,) is to be taken.

For heating liquids by steam, superheating steam, or transferring heat from one liquid or one gas to another, the mean surface of the Tubes is to be taken.

WROUGHT IRON WELDED TUBES, IN RANDOM LENGTHS, FOR STEAM, GAS, OR WATER.

1½ inch and below, Butt Welded; proved to 300 pounds per square inch, Hydraulic pressure.
 1½ inch and above, Lap " " 500 " " " "

PLATE.
2

TABLE OF STANDARD DIMENSIONS AND PRICES.

Inside Diameter.	Price, per Foot.	Price, per Foot, Galvanized.	Actual Outside Diameter.	Thickness.	Actual Inside Diameter.	Internal Circumference.	External Circumference.	Length of Pipe per square foot of inside surface.	Length of Pipe per square foot of outside surface.	Internal Area.	External Area.	Length of Pipe containing one cubic foot.	Weight per foot of length.	Number of threads per inch of screw.
Inches.	\$ c.	\$ c.	Inches.	Inches.	Inches.	Inches.	Inches.	Feet.	Feet.	Inches.	Inches.	Feet.	lbs.	
⅛	.09	.	0.405	0.068	0.270	0.848	1.272	14.15	9.44	0.0572	0.129	2500.	0.243	27
¼	.09	.15	0.54	0.088	0.364	1.144	1.696	10.50	7.075	0.1041	0.229	1385.	0.422	18
⅜	.10	.15	0.675	0.091	0.494	1.552	2.121	7.67	5.657	0.1916	0.358	751.5	0.561	18
½	.12	.18	0.84	0.109	0.623	1.957	2.652	6.13	4.502	0.3048	0.554	472.4	0.845	14
¾	.16	.24	1.05	0.113	0.824	2.589	3.299	4.635	3.637	0.5333	0.866	270.	1.126	14
1	.23	.33	1.315	0.134	1.048	3.292	4.134	3.679	2.903	0.8627	1.357	166.9	1.670	11½
1¼	.32	.44	1.66	0.140	1.380	4.335	5.215	2.768	2.301	1.496	2.164	96.25	2.258	11½
1½	.40	.55	1.9	0.145	1.611	5.061	5.969	2.371	2.01	2.038	2.835	70.65	2.694	11½
2	.56	.75	2.375	0.154	2.067	6.494	7.461	1.848	1.611	3.355	4.430	42.36	3.667	11½
2½	.90	1.20	2.875	0.204	2.468	7.754	9.032	1.547	1.328	4.783	6.491	30.11	5.773	8
3	1.30	1.65	3.5	0.217	3.067	9.636	10.996	1.245	1.091	7.388	9.621	19.49	7.547	8
3½	1.60	2.10	4.0	0.226	3.548	11.146	12.566	1.077	0.955	9.887	12.566	14.56	9.055	8
4	2.00	2.50	4.5	0.237	4.026	12.648	14.137	0.949	0.849	12.730	15.904	11.31	10.728	8
4½	2.40	3.20	5.	0.247	4.508	14.153	15.708	0.848	0.765	15.939	19.635	9.03	12.492	8
5	2.80	3.75	5.563	0.259	5.045	15.849	17.475	0.757	0.629	19.990	24.299	7.20	14.564	8
6	4.00	5.00	6.625	0.280	6.065	19.054	20.813	0.63	0.577	28.889	34.471	4.98	18.767	8
7	5.50	.	7.625	0.301	7.023	22.063	23.954	0.544	0.505	38.737	45.663	3.72	23.410	8
8	7.00	.	8.625	0.322	7.982	25.076	27.096	0.478	0.444	50.039	58.426	2.88	28.348	8
9	.	.	9.688	0.344	9.001	28.277	30.433	0.425	0.394	63.633	73.715	2.26	34.077	8
10	.	.	10.75	0.366	10.019	31.475	33.772	0.381	0.355	78.838	90.762	1.80	40.641	8

Taper of threads, 1 to 32 on each side.

WROUGHT IRON WELDED TUBES, EXTRA STRONG.

TABLE OF STANDARD DIMENSIONS AND PRICES.

Dimensions not given below made to order.

3

Nominal Diameter.	Actual Outside Diameter.	Thickness, Extra Strong.	Thickness, Double Extra Strong.	Actual Inside Diameter, Extra Strong.	Actual Inside Diameter, Double Extra Strong.	Price, per Foot, Extra Strong.	Price, per Foot, Double Extra Strong.
Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	\$ c.	\$ c.
⅛	0.405	0.100	.	0.205	.	.12	.
¼	0.54	0.123	.	0.294	.	.15	.
⅜	0.675	0.127	.	0.421	.	.17	.
½	0.84	0.149	0.298	0.542	0.244	.24	.42
¾	1.05	0.157	0.314	0.736	0.422	.34	.59
1	1.315	0.182	0.364	0.951	0.587	.50	.87
1¼	1.66	0.194	0.388	1.272	0.884	.61	1.07
1½	1.9	0.203	0.406	1.494	1.088	.85	2.05
2	2.375	0.221	0.442	1.933	1.491	1.08	2.50
2½	2.875	0.280	0.560	2.315	1.755	1.91	3.35
3	3.5	0.304	0.608	2.892	2.284	2.39	4.19
3½	4.0	0.321	0.642	3.358	2.716	3.49	6.00
4	4.5	0.341	0.682	2.818	3.136	3.81	6.67

CLASS FIRST.

FITTINGS FOR WROUGHT IRON TUBES, (WROUGHT IRON.)

[illegible]

GALVANIZED FITTINGS FOR WROUGHT IRON TUBES, (WROUGHT IRON.)

[illegible]

CLASS FIRST.—*Continued.*

FITTINGS FOR WROUGHT IRON TUBES, (CAST IRON.)

No. PLATE.

NOMINAL DIAMETER. INCHES, . . .			$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5	6	7	8
			\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
16	4	Elbows, (Ls), . . . . .	.06	.07	.08	.12	.15	.22	.34	.44	.55	1.00	1.60	2.75	3.00	3.85	4.75	6.85	20.80	24.80
17	4	Tees, (Ts), . . . . .	.09	.10	.12	.16	.22	.32	.45	.60	.85	1.50	2.25	3.35	3.90	4.40	5.95	7.95	28.30	32.40
18	4	Crosses, (Xs), . . . . .	.13	.15	.17	.22	.28	.35	.52	.72	.96	1.90	2.82	4.06	5.00	6.05	6.82	10.15	37.00	41.55
5	4	Lock Nuts, (hexagonal), . . . . .	.04	.04	.05	.05	.07	.13	.17	.20	.24	.40	.58	.75	.95	1.08	1.15	1.80	6.16	6.65
19	4	Plugs, . . . . .	.04	.04	.05	.05	.06	.08	.11	.13	.21	.36	.49	.75	.83	1.06	1.47	1.90	.	.
20	4	Bushings, . . . . .	.	.	.12	.13	.16	.19	.23	.29	.45	.72	1.00	1.35	1.85	2.40	3.00	4.30	6.00	7.75
21	4	Drop Elbows, . . . . .	.	.	.	.15	.20	.27	.	.	.	.	.	.	.	.	.	.	.	.
22	4	Drop Tees, . . . . .	.	.	.	.20	.25	.36	.	.	.	.	.	.	.	.	.	.	.	.
*23	4	{ Return Bends, } dis., centre to centre, in.,	.	.	.	$1\frac{1}{8}$	$1\frac{3}{8}$	$1\frac{1}{4}$	$2\frac{1}{8}$	$2\frac{3}{8}$	$2\frac{1}{2}$	$3\frac{1}{2}$	$4\frac{1}{2}$	$4\frac{3}{8}$	$5\frac{1}{8}$	6	$6\frac{5}{8}$	$7\frac{1}{8}$	.	.
		{ close pattern, } Price, . . . . .	.	.	.09	.12	.18	.32	.45	.53	.86	1.58	2.12	2.50	3.25	3.80	6.12	7.35	.	.
24	4	{ Return Bends, } dis., cen. to cen., in.,	.	.	.	$1\frac{5}{8}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	$4\frac{1}{2}$	$5\frac{1}{2}$	$6\frac{1}{2}$	$7\frac{1}{2}$	$8\frac{1}{2}$	$9\frac{1}{2}$	11	13	.	.
25	4	{ wide pattern, } Price, . . . . .	.	.	.12	.16	.23	.35	.53	.75	1.20	1.80	2.40	3.10	.	.	.	.	.	.
		{ round or square, }	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
26	4	Back and Side Outlet Return Bends,	.	.	.	.	.28	.65	.	.	.	.	.	.	.	.	.	.	.	.
27	4		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
28	4	Hydrant Nozzles, . . . . .	.	.	.	.40	.	.	.	.	.	.	.	.	.	.	.	.	.	.
29	4	45° Elbows (or $\frac{1}{2}$ Ls), . . . . .	.06	.07	.08	.11	.15	.22	.34	.44	.55	1.00	1.60	2.75	3.00	3.85	4.75	6.85	.	.
30	4	Lateral Branch (Y), . . . . .	.	.	.	.	.	.38	.55	.75	1.10	2.10	3.00	4.15	5.70	.	.	.	.	.

GALVANIZED FITTINGS FOR WROUGHT IRON TUBES, (CAST IRON.)

NOMINAL DIAMETER. INCHES, . . .			$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5	6	7	8
			\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
16	4	Elbows, (Ls), . . . . .	.07	.09	.11	.16	.23	.35	.56	.72	1.08	1.85	2.70	4.40	5.05	6.40	8.00	11.75	27.50	34.50
17	4	Tees, (Ts), . . . . .	.10	.13	.16	.22	.31	.50	.72	1.00	1.38	2.45	3.75	5.70	6.40	8.25	9.25	14.50	37.00	44.60
18	4	Crosses, (Xs), . . . . .	.14	.18	.22	.30	.41	.53	.84	1.14	1.65	3.10	4.37	6.95	8.25	10.25	10.80	16.50	48.00	57.00
5	4	Lock Nuts, (hexagonal), . . . . .	.05	.05	.06	.07	.10	.17	.21	.25	.31	.52	.80	1.10	1.50	1.70	2.00	2.75	7.50	8.50
19	4	Plugs, . . . . .	.04	.04	.06	.06	.08	.11	.16	.21	.32	.56	.78	1.15	1.35	1.80	2.40	3.30	.	.
21	4	Drop Elbows, . . . . .	.	.	.	.19	.27	.39	.	.	.	.	.	.	.	.	.	.	.	.
22	4	Drop Tees, . . . . .	.	.	.	.26	.35	.53	.	.	.	.	.	.	.	.	.	.	.	.
23	4	Return Bends, close pattern, . . . . .	.	.	.15	.18	.28	.53	.72	.88	1.42	2.60	3.85	4.60	6.00	7.25	12.00	14.50	.	.
24	4	Return Bends, wide pattern, }	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
25	4		.	.	.16	.23	.35	.56	.88	1.25	1.80	3.15	4.60	5.85	.	.	.	.	.	.
		Round or Square, . . . . .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

Globe Crosses. Reducing and Corner Fittings. Same prices as of Crosses and Tees, or Elbows, of usual form; the largest outlet being taken as standard for price. The Globe-shape is only used for odd fittings, for which we have no regular pattern.

Sockets for Longscrews made specially, and must so be ordered.

*In ordinary close return bends for coils, always state the length of tubes to be used in the coils, so that the spread of the tubes will be allowed for.

CLASS FIRST—*Continued.*

MANIFOLDS.

No. PLATE.

36 5

ALL MANIFOLDS have left-hand Taper Screws in the outlets, unless specially ordered, either with running or right-hand Taper Screws. THEY are also open at both ends, with *right-hand* Taper Thread of same size as outlets, irrespective of size of body. EITHER or both ends, however, can be drilled out to take Screws the size of body, or any size less than the size selected as size of body. BACK OR SIDE OUTLETS can be attached to any manifold pattern to order; but in ordering, care must be taken to describe the plan of attachment of Back or Side Outlets.

BACK OR SIDE OUTLETS of same size as Front Outlets, will be charged as additional Front Outlets; other sizes, proportionally.

NUMBER OF OUTLETS,		2	3	4	5	6	7	8	10	12	14	16	18	20
Size of Body.		\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
For $\frac{3}{4}$ inch Tube, 2 inch centre to centre,	1 inch,	.48	.60	.82	.92	1.12	1.26	1.45	1.85	.	.	.	.	.
	1 $\frac{1}{4}$ "	.58	.76	1.05	1.25	1.50	1.70	1.85	2.12	2.70	.	.	.	.
	1 $\frac{1}{2}$ "	.80	1.02	1.25	1.45	1.70	1.90	2.25	2.80	2.95	3.40	4.35	4.85	5.40
	1 $\frac{3}{4}$ "	.76	1.00	1.25	1.50	1.80	2.00	2.20	2.85	3.10	.	.	.	.
For 1 inch Tube, 2 $\frac{1}{2}$ inches, centre to centre,	1 $\frac{1}{2}$ "	.88	1.15	1.45	1.90	2.00	2.25	2.55	3.45	4.15	.	.	.	.
	2 "	1.26	1.65	2.00	2.25	2.60	2.95	3.15	4.12	4.80	5.20	6.00	7.40	8.30
	2 $\frac{1}{2}$ "	1.60	2.00	2.50	3.40	3.60	4.15	4.70	6.00	7.00	7.90	.	.	.
For 1 $\frac{1}{2}$ inch Tube, 3 inches, centre to centre,	3 "	2.45	3.00	3.60	4.20	4.85	5.50	6.20	.	.	.	.	.	.
	2 "	1.40	1.75	2.10	2.55	2.85	3.20	3.70	.	.	.	.	.	.
For 1 $\frac{1}{2}$ inch Tube, 3 $\frac{1}{2}$ inches, centre to centre,	2 $\frac{1}{2}$ "	2.30	2.85	3.40	4.00	4.70	5.35	6.00	.	.	.	.	.	.
	3 "	2.90	3.80	4.70	5.65	6.70	8.10	8.80	.	.	.	.	.	.
For 2 inch Tube, 4 $\frac{1}{2}$ inches, centre to centre.		3 "							.	.	.	.	.	.

MANIFOLD VALVES.

37 5

NUMBER OF OUTLETS,		2	3	4	5	6	7	8	10
Size of Body.		\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
For $\frac{3}{4}$ inch Tube,	1 $\frac{1}{2}$ inch.	6.40	9.00	12.00	16.00	20.00	21.25	24.50	29.25
" 1 " "	2 "	8.75	12.25	16.30	20.00	24.00	28.00	32.00	36.50

DOUBLE MANIFOLDS.

Face Outlets, 1 inch; 2 $\frac{1}{2}$ inches, centre to centre; end or back outlets to order, without extra charge, if not over 1 inch.

38 5

NUMBER OF PAIRS OF OUTLETS,		4	5	6	8	10	12	14	16	18	20	22	24	26	28	30
		\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Plain Pattern,		3.30	3.70	4.65	6.00	7.50	8.40	9.65	10.45	12.20	13.25	.	.	.	.	.
Ornamental base pattern,		3.80	4.40	5.65	7.60	8.50	10.00	10.80	12.30	13.90	14.50	15.50	17.50	18.50	20.50	21.50
" top,		1.90	2.50	3.10	4.30	4.55	4.75	5.35	6.00	6.35	7.10	7.65	9.20	9.70	10.70	11.20

COIL STANDS, (PER PAIR.)

39 5

NUMBER OF TUBES HIGH,		2	4	6	8	10	12	14	16	18	20	22	24
Size of Tube.	Centre to centre of pairs of Tubes.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
$\frac{3}{4}$	4 $\frac{1}{4}$	.36	.52	.68	.84	1.00	1.16	1.32	1.40	.	.	.	.
1	5	.43	.62	.85	1.05	1.45	1.70	1.80	1.95	2.20	2.25	2.55	2.80
1 $\frac{1}{4}$	6 $\frac{3}{4}$	.76	1.02	1.62	2.20	2.80	3.40	.	.	.	.	.	.
1 $\frac{1}{2}$	7 $\frac{1}{2}$	1.14	1.48	1.82	2.35	2.95	3.50	.	.	.	.	.	.
2	9 $\frac{1}{4}$	2.40	3.00	3.60	4.20	4.80	5.40	.	.	.	.	.	.

SUPPORTS FOR TUBES.

CAST IRON FLANGES.

[illegible]

CLASS FIRST.—Continued.

CAST IRON OVAL FLANGES.

No.	PLATE.	SIZE OF TUBE,	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
53	5		\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
		$2\frac{5}{16}$ inches, centre to centre, of $\frac{1}{2}$ inch bolts, .	.18	.20	.22	.26	.	.	.	.
		$3\frac{1}{4}$ inches, centre to centre, of $\frac{5}{8}$ inch bolts, .	.	.	.29	.32	.36	.40	.	.
		$4\frac{3}{4}$ inches, centre to centre, of $\frac{3}{4}$ inch bolts, .	.	.	.	.	.51	.55	.60	.65

CAST IRON FLANGES, WITH BOSSES.

- 54 5 Diameters corresponding to those of flanges upon Cast Iron Pipe, for connecting Wrought Iron Tubes to Cast Iron Pipe.
The price given in heavy figures are those of Standard Pipe Flanges.

DIAMETER OF FLANGES.	NUMBER OF BOLTS.	SIZE OF BOLTS.	SIZE OF TUBE TO WHICH THE FLANGES BELONG.							
			3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5	6	7	8
			\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
$6\frac{1}{2}$	4	$\frac{1}{2}$	1.14	.	.	.	.	.	.	.
7	4	$\frac{9}{16}$	1.30	1.52	.	.	.	.	.	.
$7\frac{1}{2}$	4	$\frac{9}{16}$	1.42	1.55	.	.	.	.	.	.
8	5	$\frac{9}{16}$	.	1.82	1.87	.	.	.	.	.
$8\frac{1}{2}$	5	$\frac{5}{8}$	.	.	2.00	2.10	.	.	.	.
9	5	$\frac{5}{8}$	.	.	2.10	2.20	.	.	.	.
$9\frac{1}{2}$	6	$\frac{5}{8}$	.	.	.	2.95	3.00	.	.	.
10	6	$\frac{5}{8}$	.	.	.	.	3.20	.	.	.
$10\frac{1}{2}$	6	$\frac{5}{8}$	.	.	.	.	3.75	3.90	.	.
11	6	$\frac{5}{8}$	.	.	.	.	.	4.05	.	.
12	8	$\frac{5}{8}$	.	.	.	.	.	4.65	6.30	.
$13\frac{1}{2}$	8	$\frac{5}{8}$	.	.	.	.	.	.	8.70	9.00

COLLARS.

56	5	SIZE,	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
		Price,	\$0.12	\$0.13	\$0.14	\$0.15	\$0.16	\$0.17	\$0.18	\$0.19

FLANGE UNIONS WITH BOLTS AND NUTS.

55	5	SIZE OF TUBE,	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4
		Diameter of Flange,	4	$4\frac{1}{4}$	5	$5\frac{1}{2}$	6	$6\frac{3}{4}$	$7\frac{1}{2}$
		Price,	\$1.85	\$2.28	\$2.66	\$3.40	\$4.10	\$4.90	\$5.80

MALLEABLE IRON UNIONS.

57	5	SIZE OF TUBE,	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$
		Price,	\$0.26	\$0.28	\$0.34	\$0.42	\$0.52	\$0.64	\$0.84	\$1.40	\$2.32	\$3.72	\$5.40

FOR PRICES OF ARTICLES ON THIS PAGE, SEE SPECIAL PRICE LIST.

CLASS FIRST.—Continued.

RADIATING COILS.

No.	PLATE.	
63	6	Wall Coils, with Return Bends. Same price, per foot of pipe used, as given in list below for Box Coils (No. 70), with additional charge for all manifolds, and for excess of price of rosette or movable hook plates over plain hook plates, as per lists of prices of those articles.
64		
65	6	Wall Coils, with Hook Plates and Manifolds (to be built at the place where used). Prices to be estimated from materials used, separately, as on lists.
66		N. B.—Coils made with straight tubes, between two manifolds, will not remain tight. Allowance is required for expansion, either by Elbows, as shown on figures No. 65 or 66; or by Return Bends, as shown in figures 63 or 64, or in some similar way.

70 7 RETURN BEND OR BOX COILS. (MADE UP WITH MANIFOLDS AND STANDS READY FOR USE.)

The height being governed by the Stands, and the width by the Manifolds, as previously given in this Catalogue.

[illegible]

VERTICAL TUBE COILS.

Two rows of Tubes, 2 feet 7 inches long; whole height, 3 feet 2 inches.

[illegible]

VERTICAL TUBE COILS, (CIRCULAR.) (WITH ORNAMENTAL COVER AND MOULDING AND BASE.)

Forty Tubes; outside diameter, 25 inches; whole height, 3 feet 2 inches.

[illegible]

COIL SCREENS.

Height of Screen, from floor to underside of marble top,	.	.	.	1 ft. 3½ in.	1 ft. 8¼ in.	2 ft. 1½ in.	2 ft. 6 in.
Number of ¾ inch tubes the Coil may have in height,	.	.	.	6	8	10	12
" 1 " " " " "	.	.	.	4	6	8	10

The usual height is 2 ft. 6 in. and is suited for 12, 3 in. tubes.

The usual height is 2 ft. 6 in., and is suited for 12- $\frac{3}{4}$ inch or 10-1 inch high Coils.
In ordering, state the size of the coils and the number of coils.

In ordering, state one, two, three, or four sides. 2 ft. 6 in. high will be assumed, unless otherwise ordered.

76	}	8	Price, per running foot, (all heights), measuring outside the body of the Screen, without marble or iron top.
77			
			Plain castings, unpainted,
			“ “ painted,
			Bronzed, chocolate or green, projecting ornaments, gold bronze,
			White or colored, with figures and projection, gold bronze,
			Gold bronzed,
			Marble Tops, OG edge, one inch thick, measured outside of top, per square foot,

COILS OF BENT TUBE.

80	9	Tuyere Coils, 1 inch Tube, 18 cents per pound, net cash.
81	9	Tuyere with Coil. Coil as above. Castings, per pound, 5 cents, net cash.

CLASS FIRST.—*Continued.*No. PLATE
82 9

SOAP COILS, WITH STRAPS COMPLETE, WITH INTERNAL BLOW-UP-PIPE.

SIZE OF TUBE,	$\frac{3}{4}$	1	$1\frac{1}{2}$	$1\frac{1}{2}$
	\$ c.	\$ c.	\$ c.	\$ c.
Coils under 30 feet long, .	.	1.22	1.44	1.53
“ 50 “ . . . .	.	1.10	1.27	1.36
“ 75 “ . . . .	.	.92	1.14	1.23
Coils over 75 “ . . . .	.90	1.14	1.22	1.42



COILS OF TUBE OF ORDINARY THICKNESS, FORMED OF LENGTHS WELDED TOGETHER.

Nos. 83, 84, 85, 86, 87, 88, 89. Plate 9. The drawings show the general forms of Coils. It is impossible to give any price per foot of pipe for unusual shapes or dimensions. The table below gives rates for usual kinds, *without strapping*. Coils of ordinary tube are proved at 300 lbs. pressure; those of extra strong are proved at 1000 lbs. pressure; double extra strong Coils proved at any pressure ordered.

Coils will not be made of less diameter nor containing a greater length of tube than given in the list, except at the risk of the party ordering, although it is possible that such may be made at no greater cost.

INSIDE DIAMETER OF TUBE. INCHES,	BUTT WELDED TUBES.						LAP WELDED TUBES.					
	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{2}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4
Least Inside Diameter of Coil. Inches,	5	7	9	11	14	18	22	30	38	46	54	62
Greatest length of Tube in one coil, welded up. Feet,	60	80	100	130	150	180	200	200	175	150	125	100
	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Coils in lengths, 20 feet and over to 40 feet, . . .	.68	.70	.72	.85	1.02	1.30	1.58	2.56	3.66	4.90	6.47	9.00
“ 40 “ 200 “ . . . .	.34	.36	.43	.56	.70	.92	1.18	1.75	2.55	3.00	4.00	4.75

COILS OF EXTRA STRONG TUBE, FORMED OF LENGTHS WELDED TOGETHER.

Nos. 83, 84, 85, 86, 87, 88, 89. Plate 9.

INSIDE DIAMETER OF TUBE. INCHES,	BUTT WELDED TUBES.						LAP WELDED TUBES.		
	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{2}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$
Least Inside Diameter of Coil. Inches,	$4\frac{1}{2}$	6	7	8	10	13	16	19	24
Greatest length of Tube in one Coil, welded up. Feet, . .	60	80	100	130	150	180	200	200	175
	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Coils in length, 20 feet and over to 40 feet, . . . .	.74	.76	.80	.94	1.13	1.44	1.74	2.75	4.05
“ 40 “ 200 “ . . . .	.38	.41	.47	.61	.79	1.00	1.28	1.78	2.75

SPECIAL COILS, CONSTRUCTED FROM WROUGHT IRON TUBE AND FITTINGS.

90 9

Nos. 95, 96, 97, 98, 99, 100. Plate 10. The figures show different arrangements of Tubes, which can be varied or made any size to order, all the materials being standard and usual articles of our stock.

GAS FITTINGS

PER POUND.

Plates 12, 13, 14, give the usual numbers as adopted by all manufacturers for each size or kind of fitting.

In ordering be careful to refer to the edition of the catalogue.

END OF CLASS FIRST.

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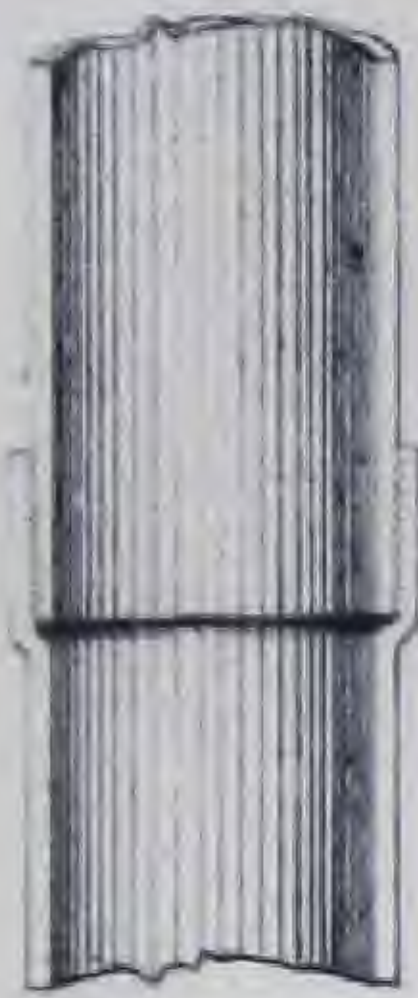
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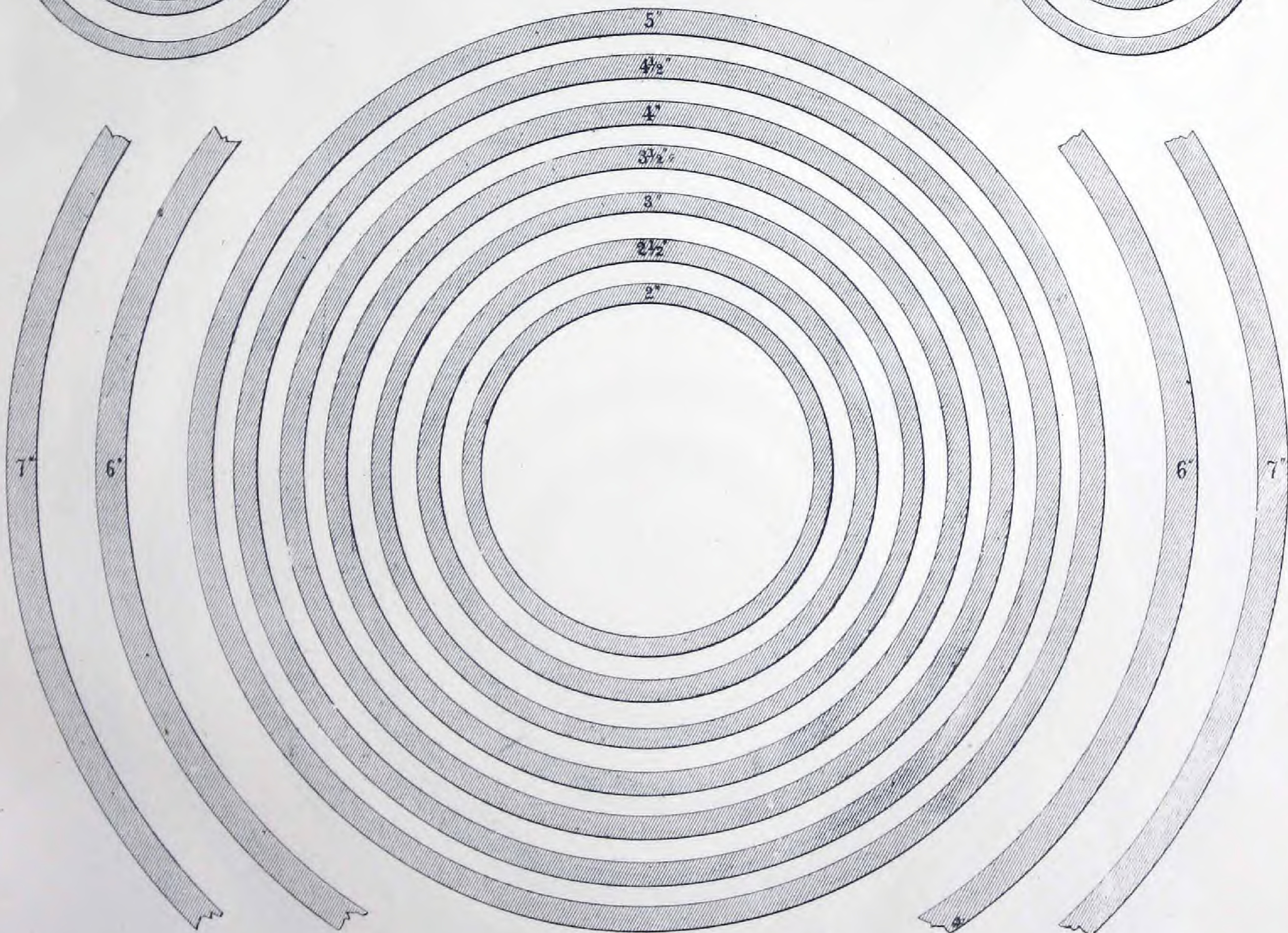
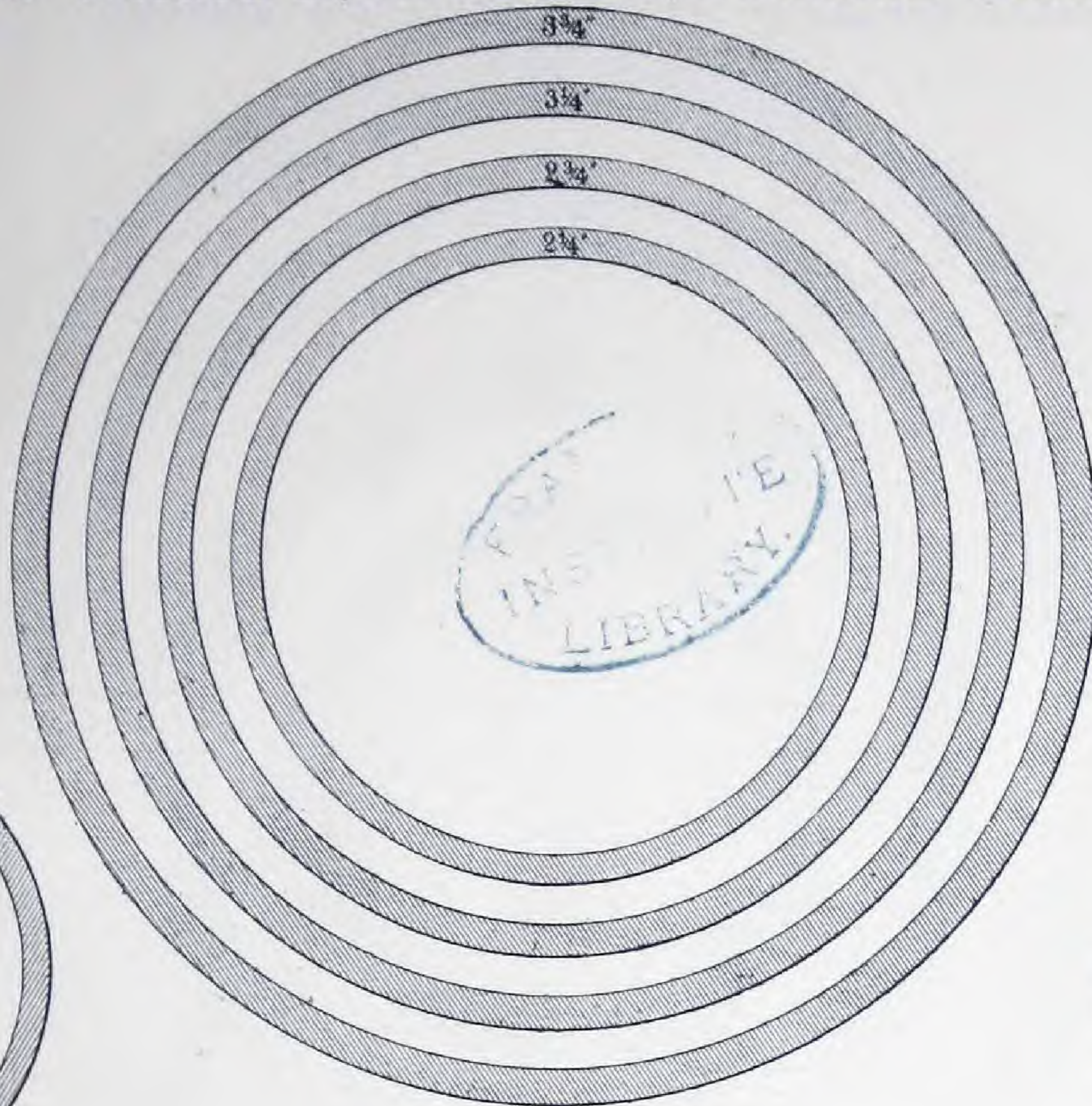
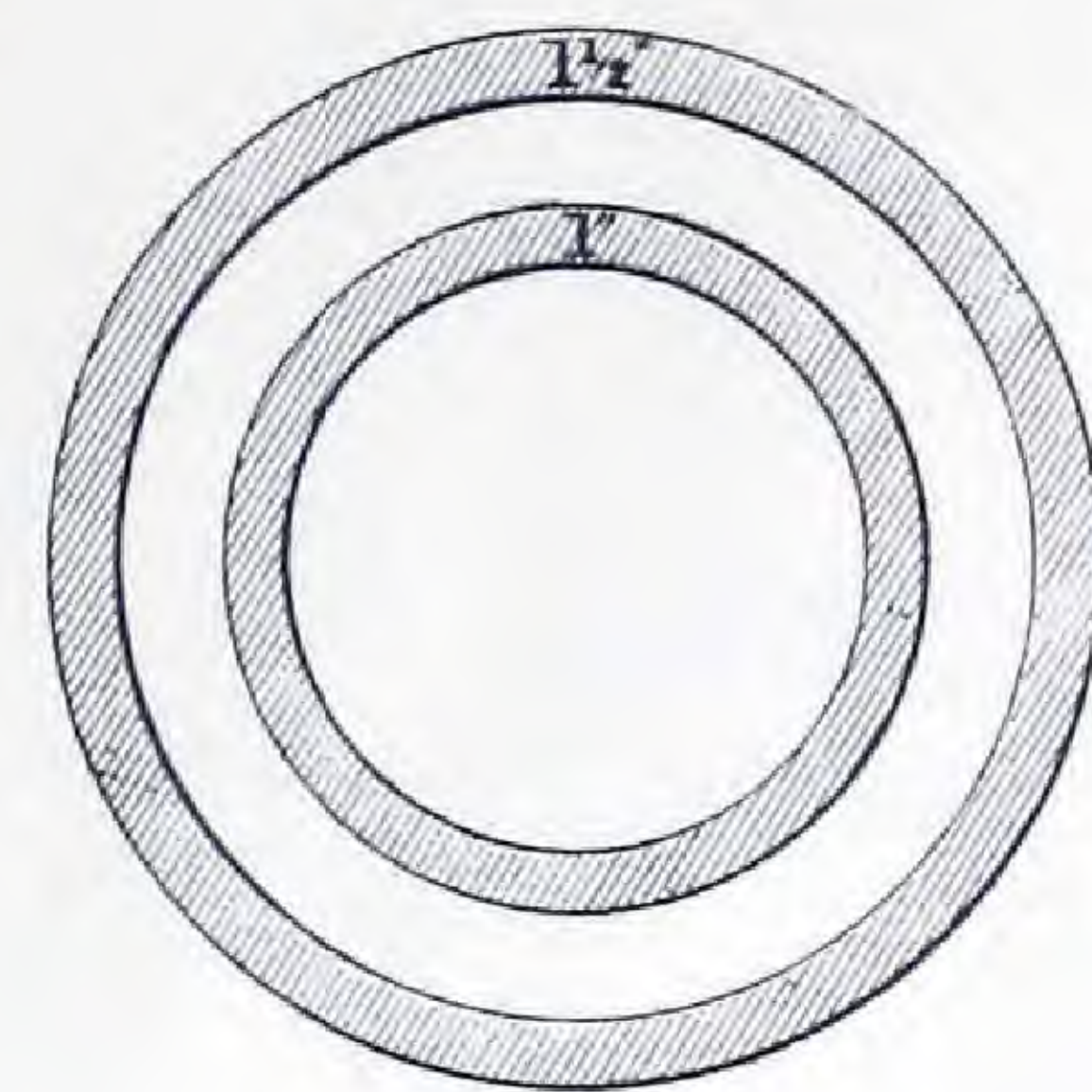
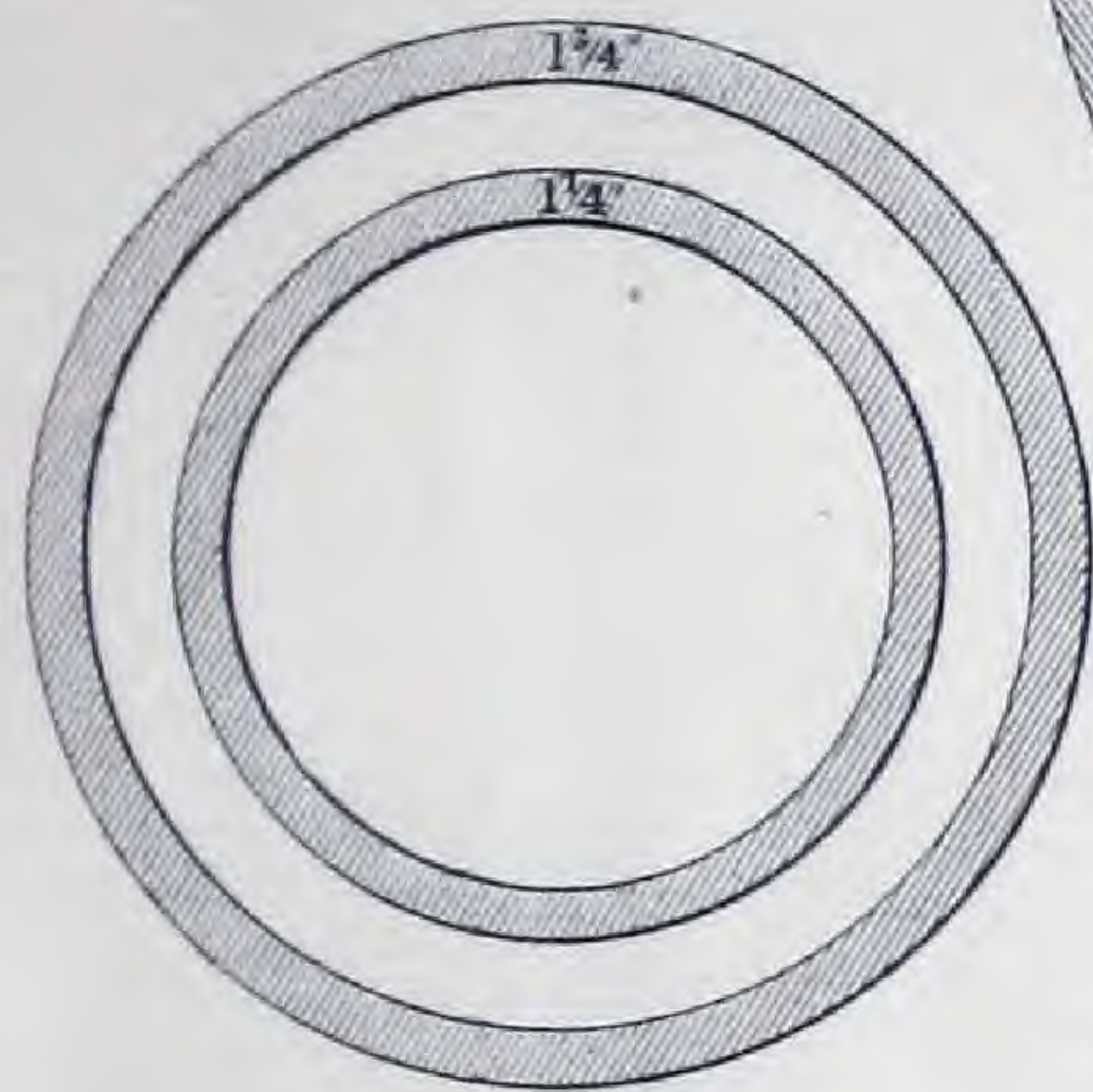
Plate 1.

LAP WELDED BOILER TUBES, STANDARD SIZES.

INSERTED JOINT.



FLUSH JOINT.



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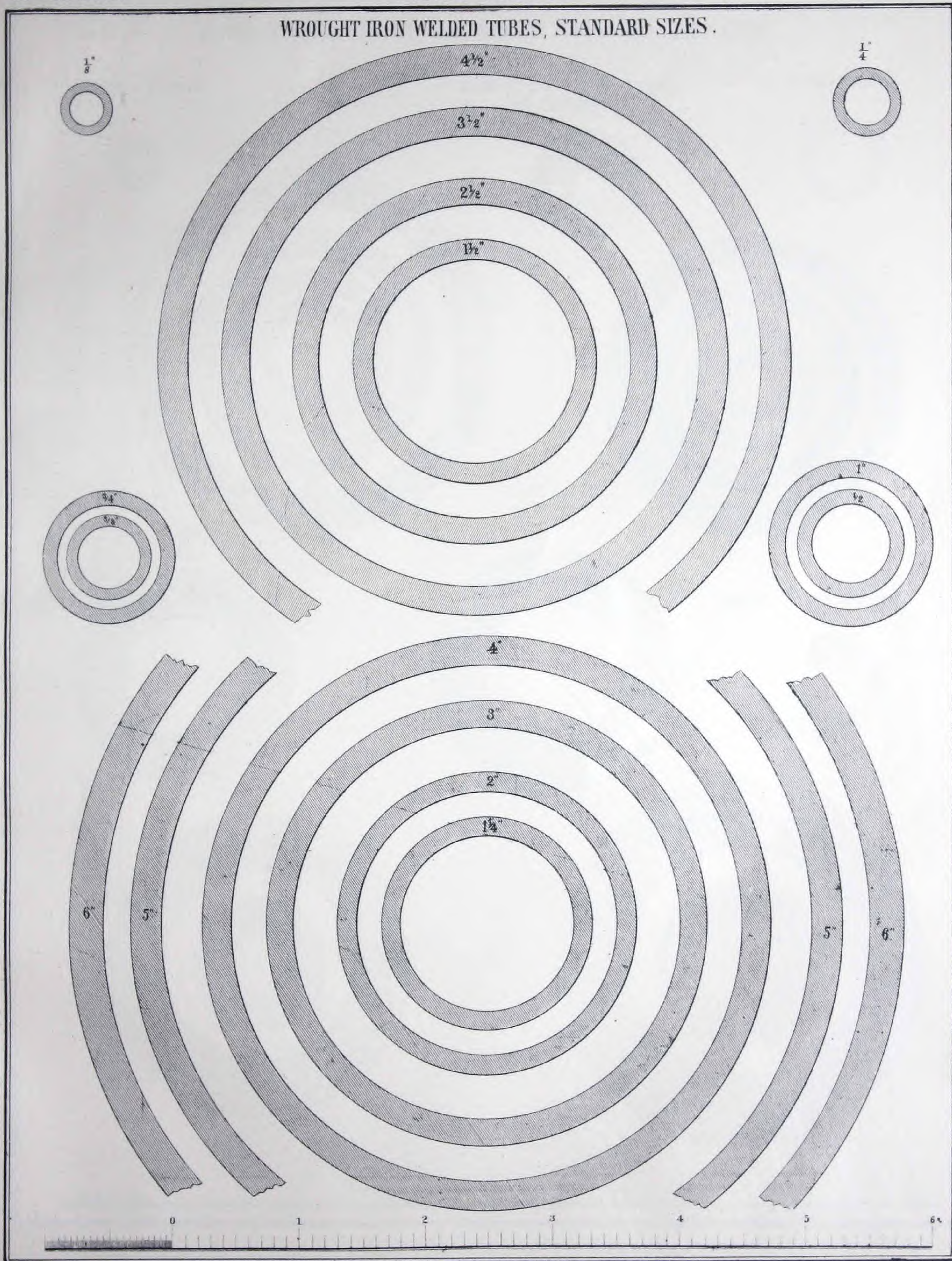
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Plate 2

WROUGHT IRON WELDED TUBES, STANDARD SIZES.



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Plate 3.

EXTRA STRONG WROUGHT IRON WELDED TUBES, STANDARD SIZES.

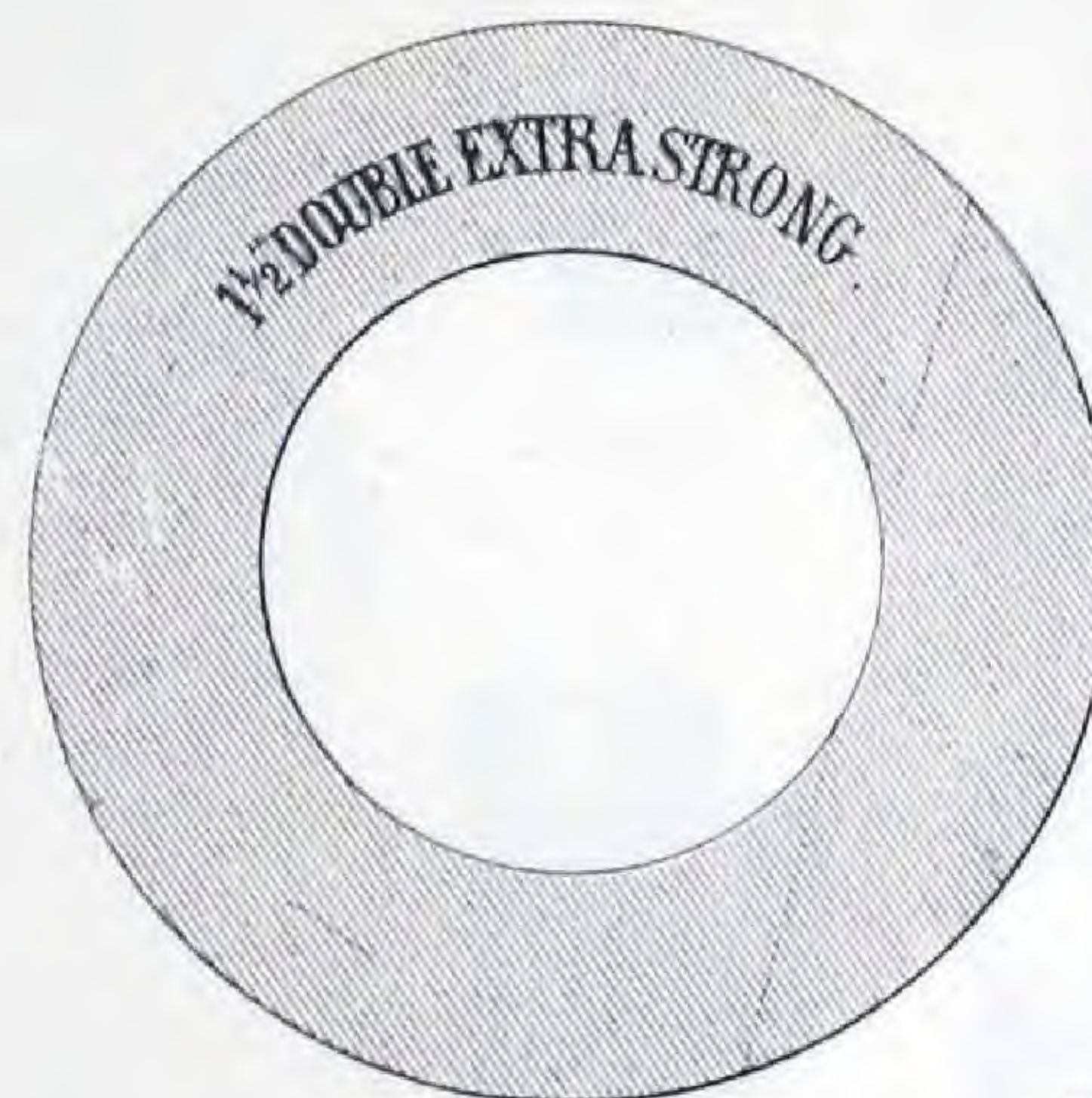
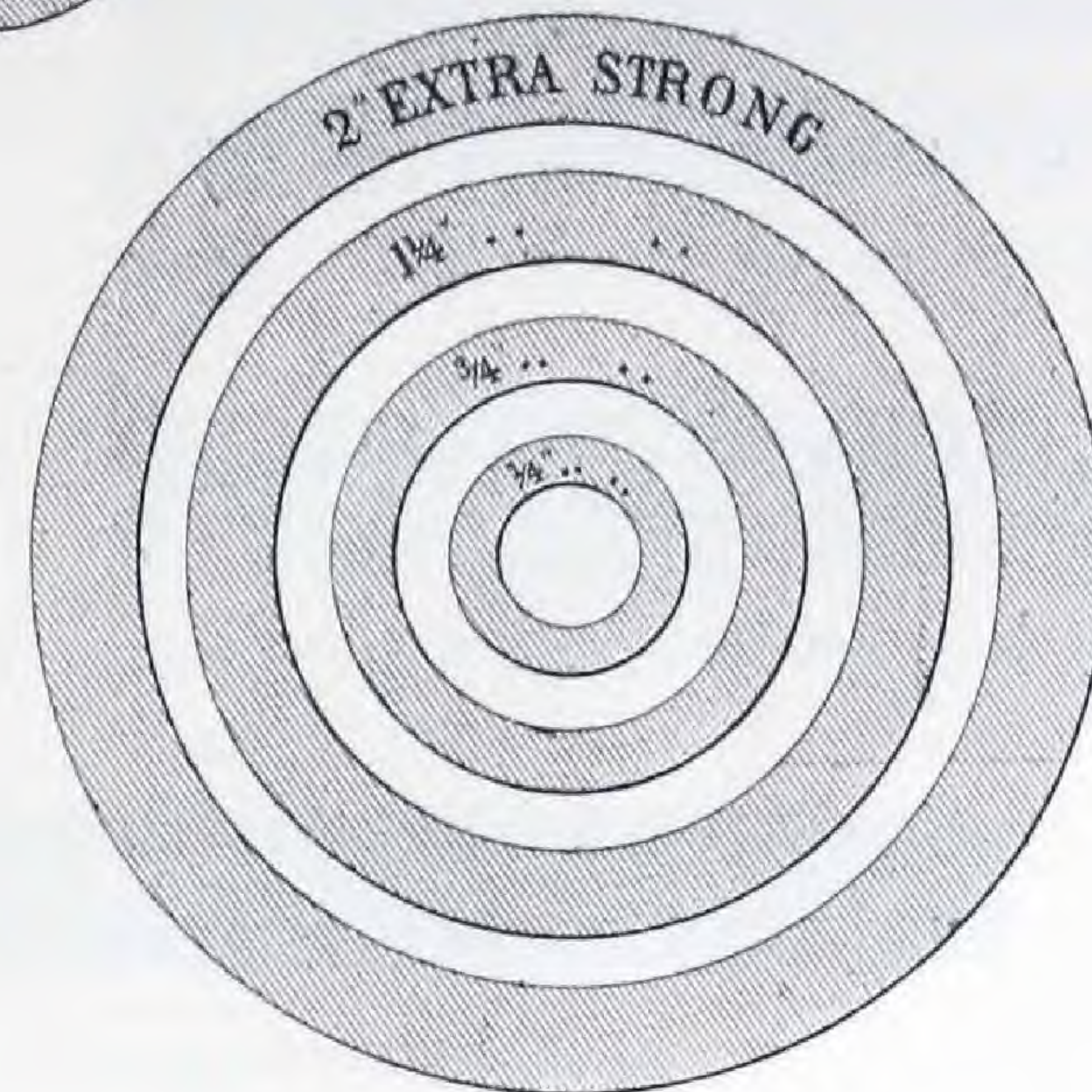
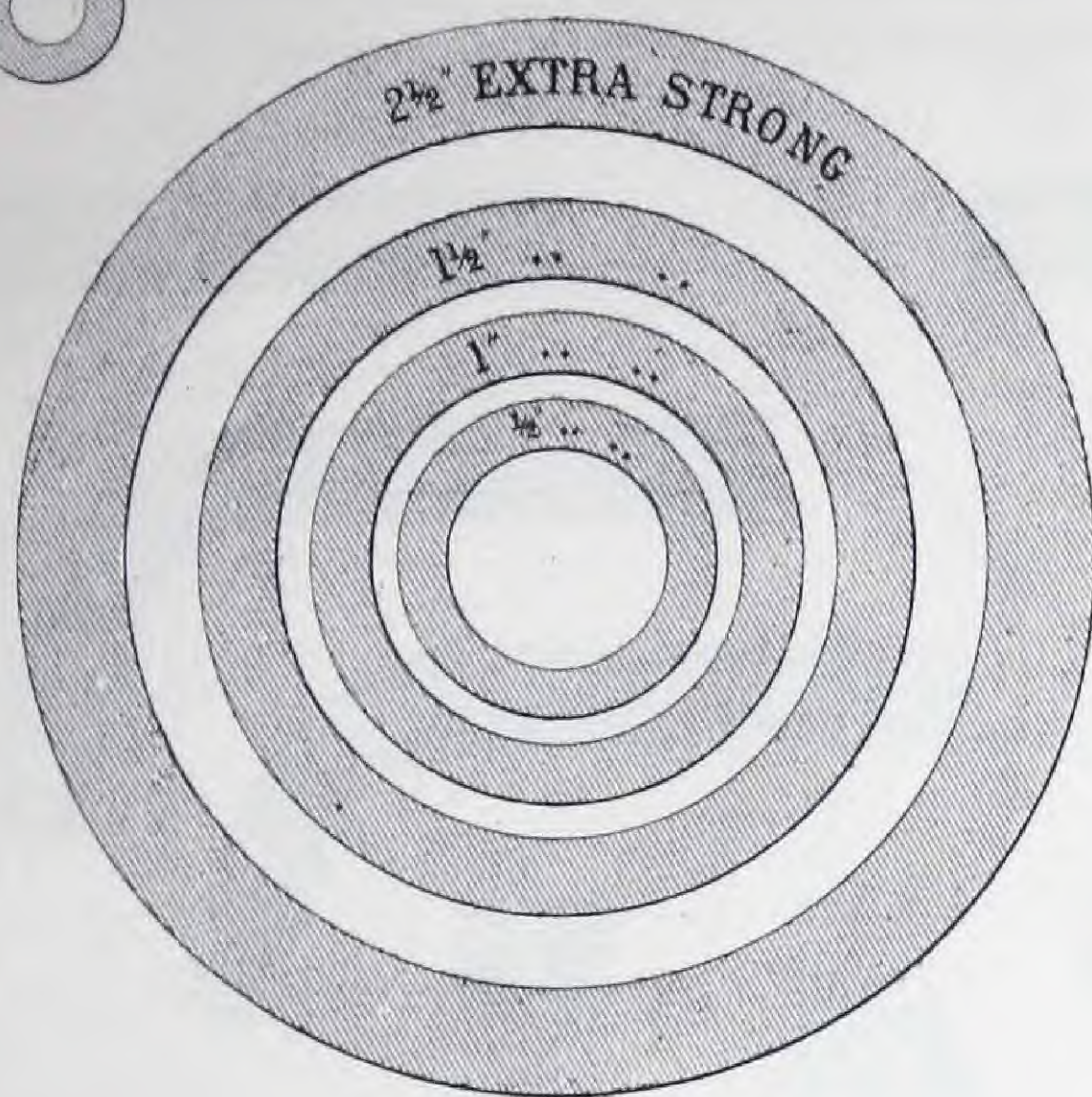
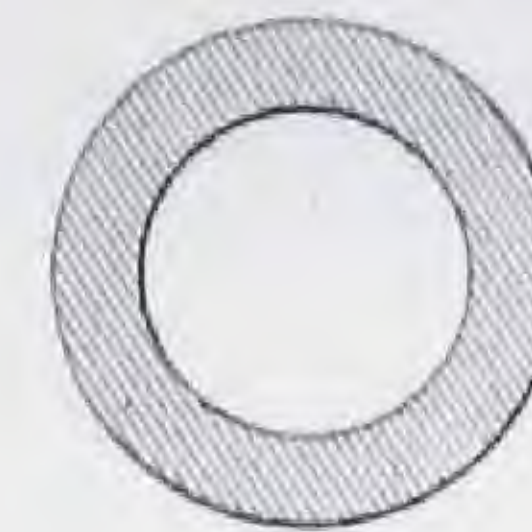
$\frac{1}{8}$ " EXTRA STRONG.



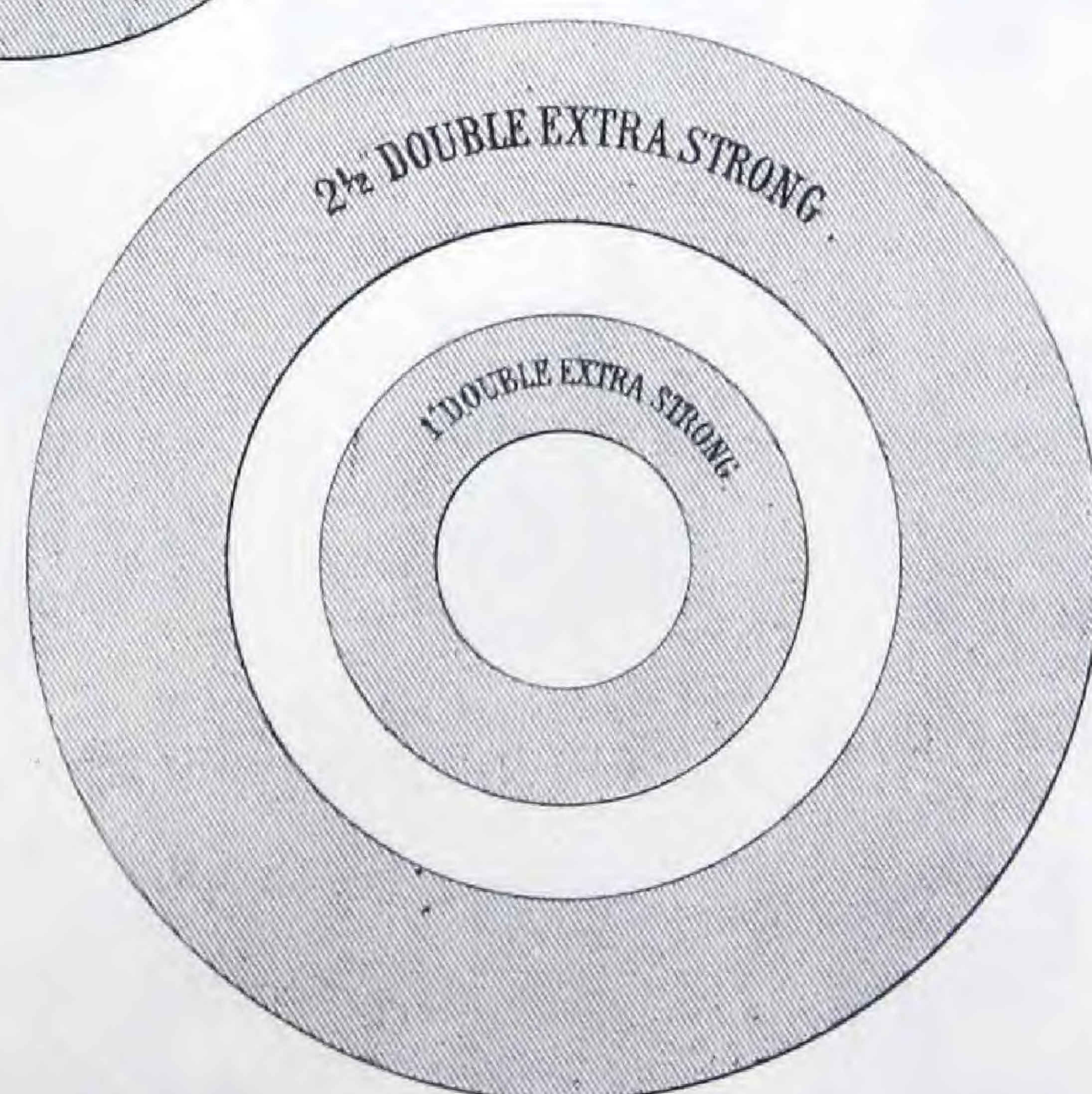
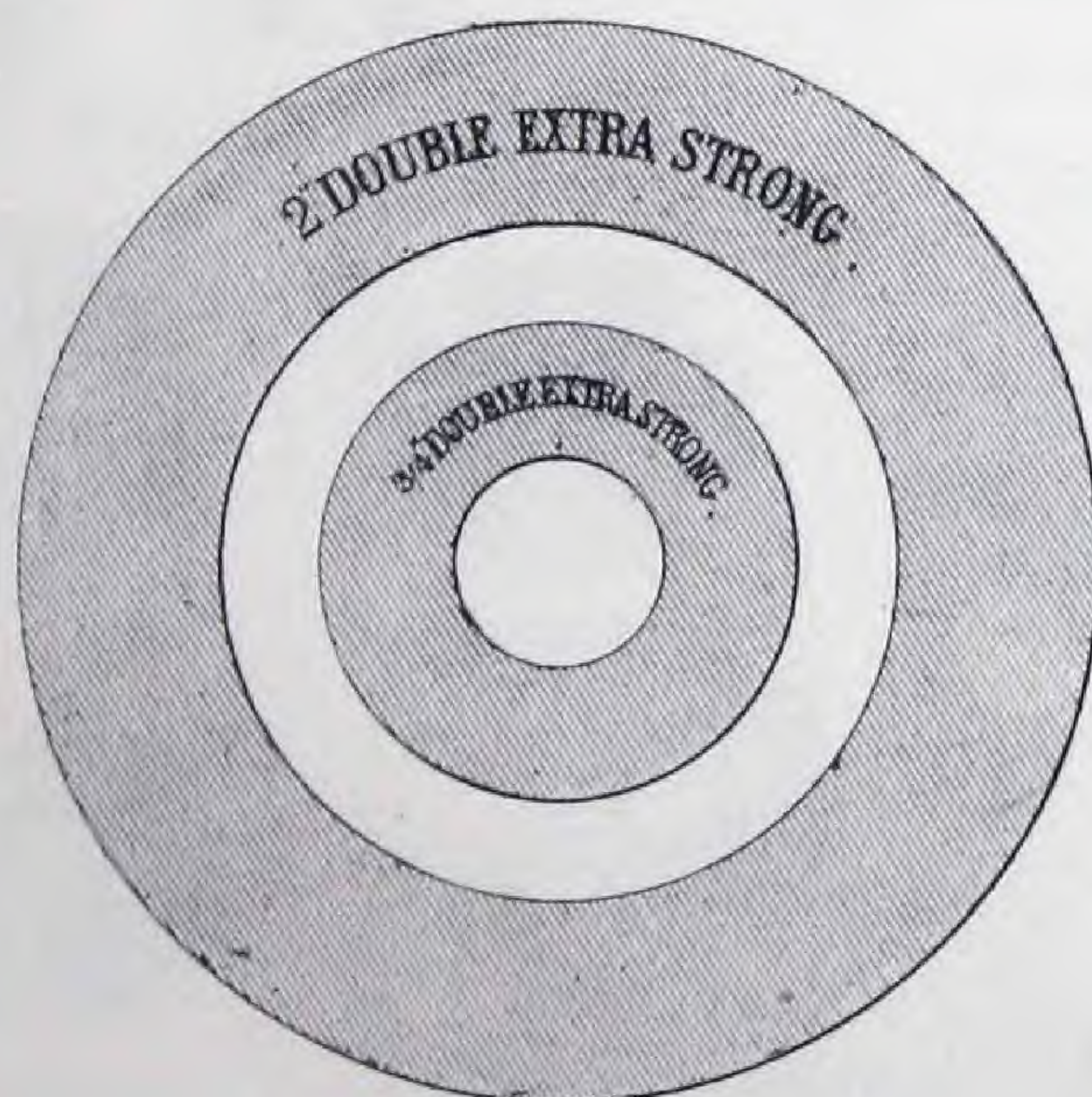
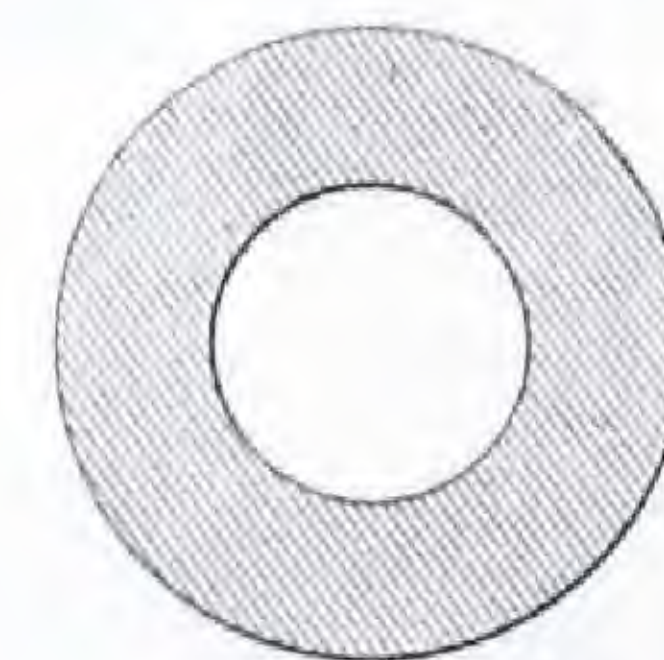
TUBE OF SPECIAL THICKNESS,
AS ORDERED.



$\frac{3}{8}$ " EXTRA STRONG.



$\frac{1}{2}$ " DOUBLE EXTRA STRONG.



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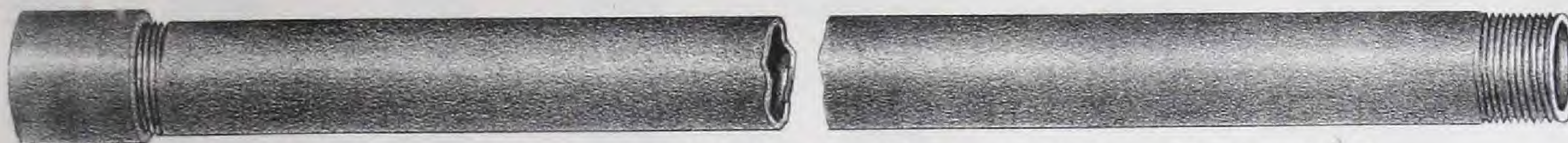
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Plate 4.

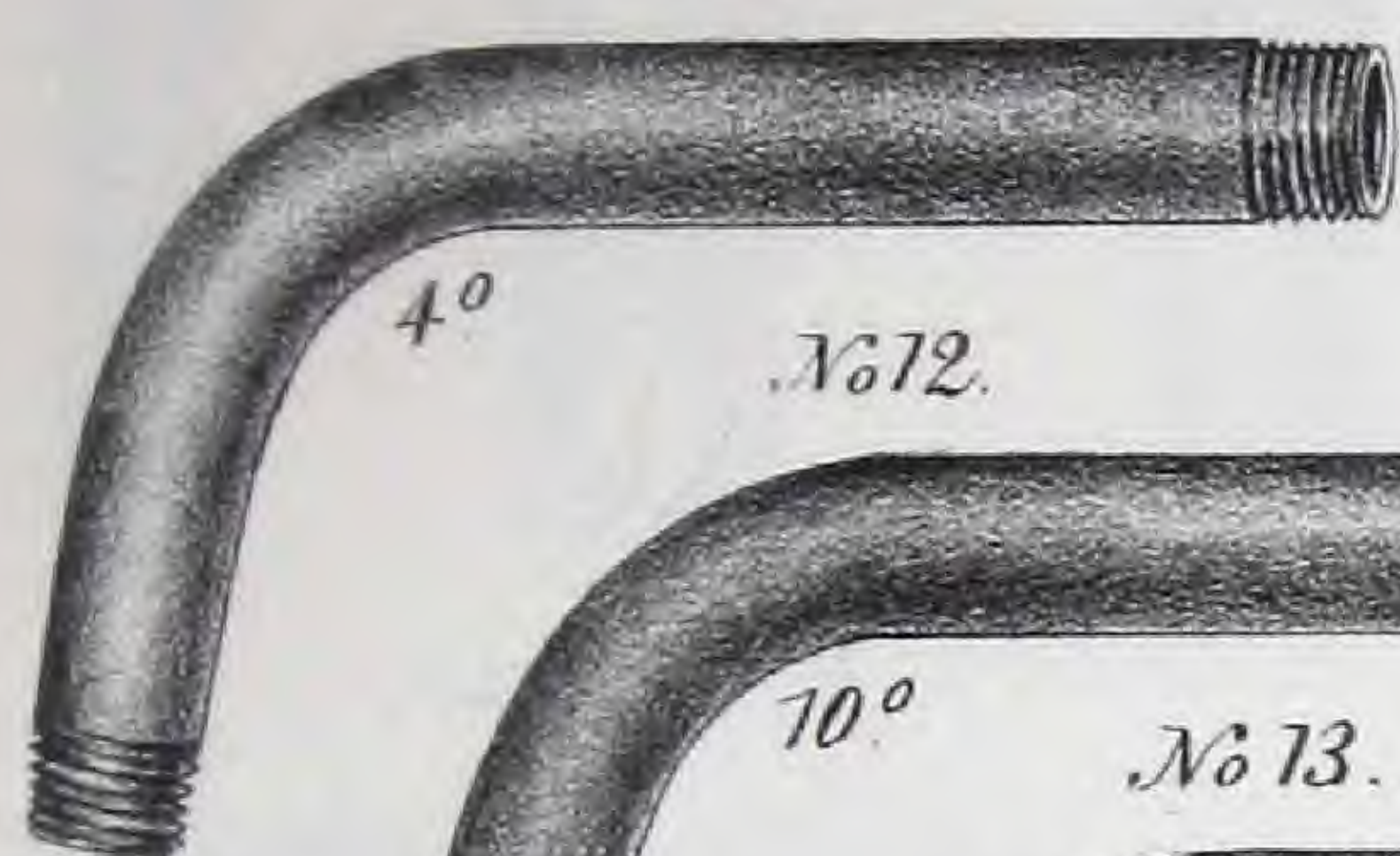
No 7.



Steam, Gas or Water pipe. Wrought or Galvanized Iron. Butt welded.

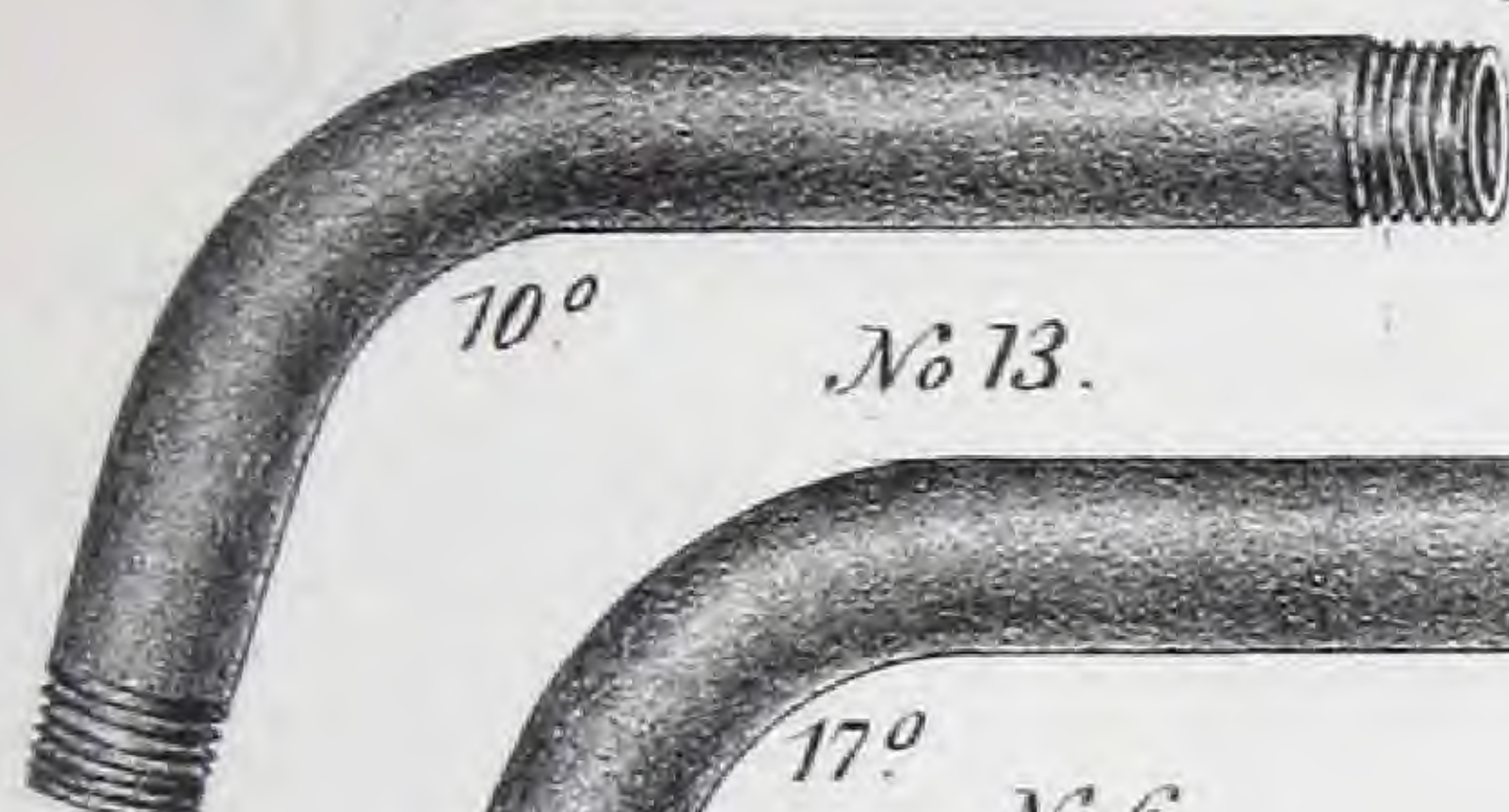
No 11.

No 10.



4°

No 12.



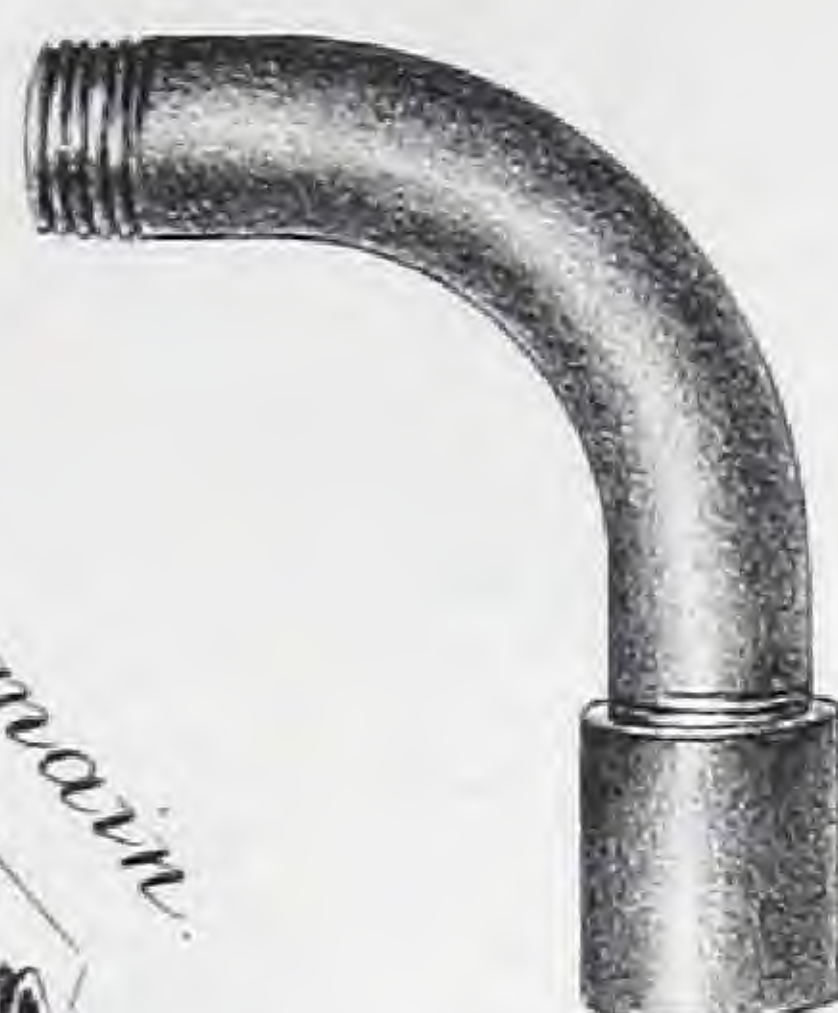
10°

No 13.

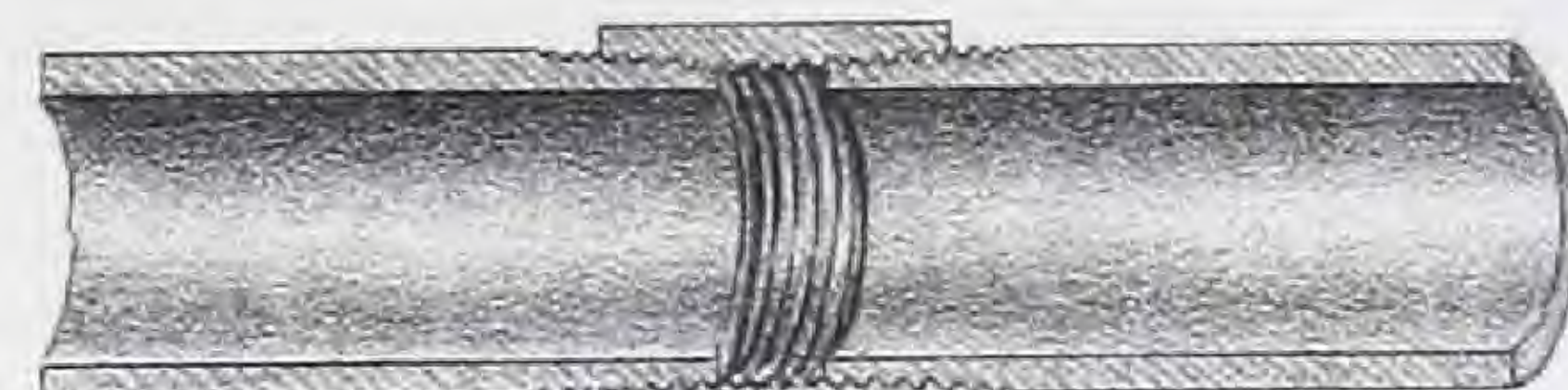


17°

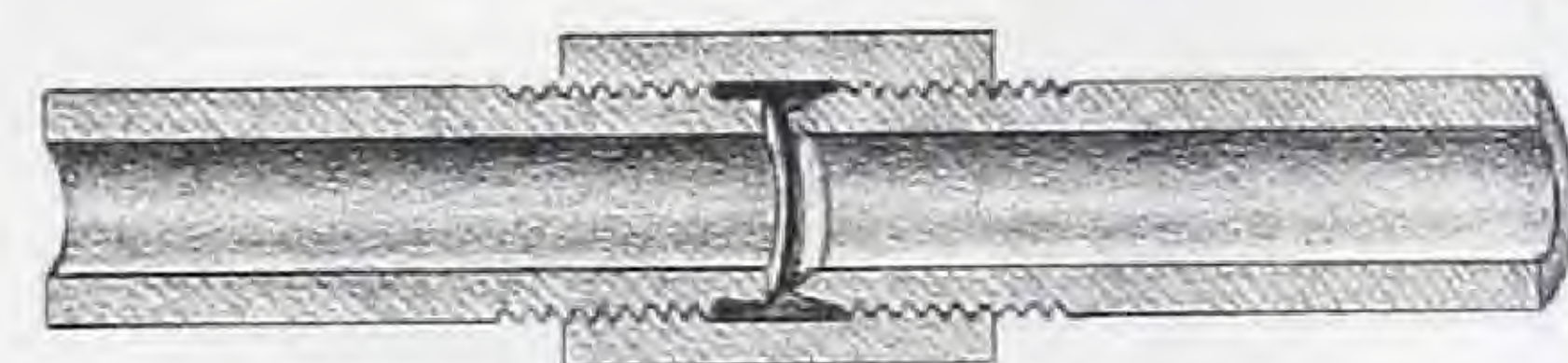
No 6.



Wrought Bend.

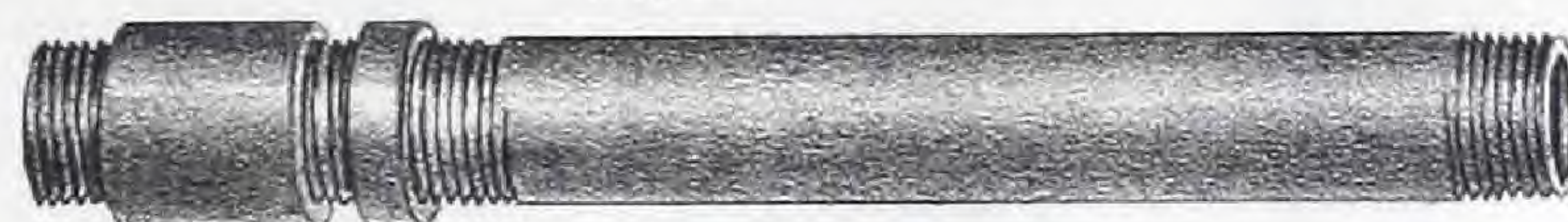


Section of Steam or taper screw joint.



Section of a hydraulic or cone joint.

No 9.



Longscrew.



Bushing.

No 8.



Shoulder & close nipples.

No 7.



Cap.

No 5.



No 4.



No 5.



Locknuts.

No 16.



Ells.



No 28.



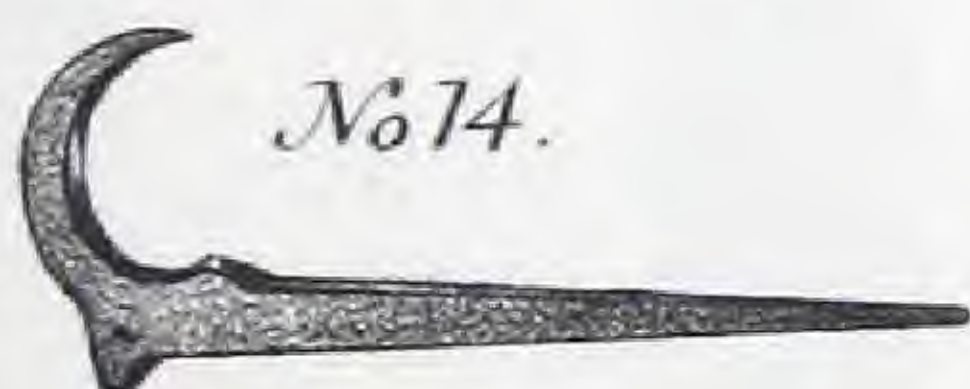
Hydrant Nozzle, Cast Iron.

No 15.



Hydrant Nozzle, wrought Iron.

No 14.



Hook.

No 19.



Plug.

No 3.



Reducing Sockets.

No 2.



Socket.

No 17.



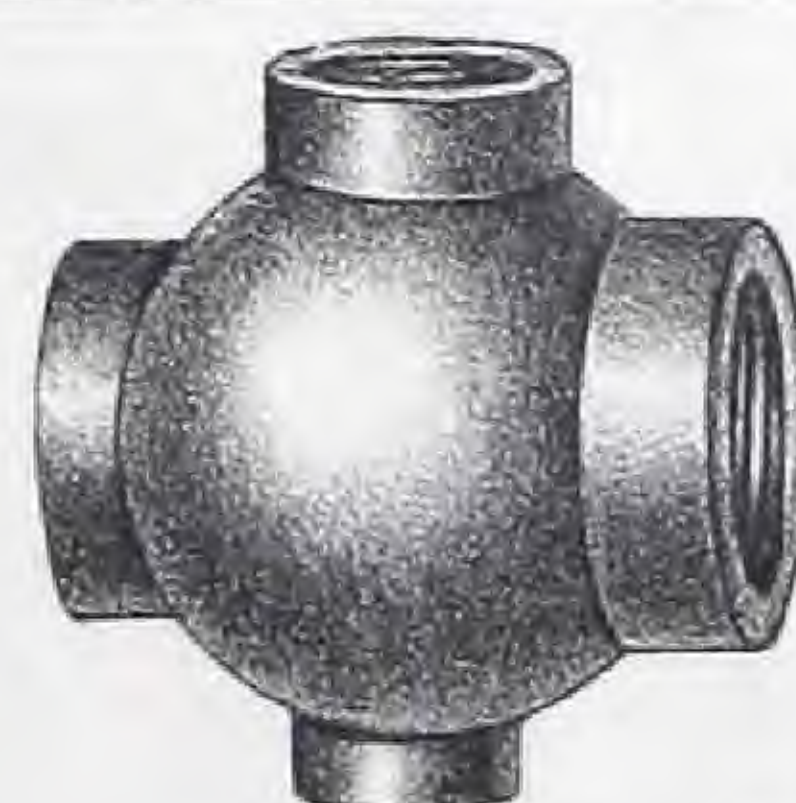
Tees.



Tees.

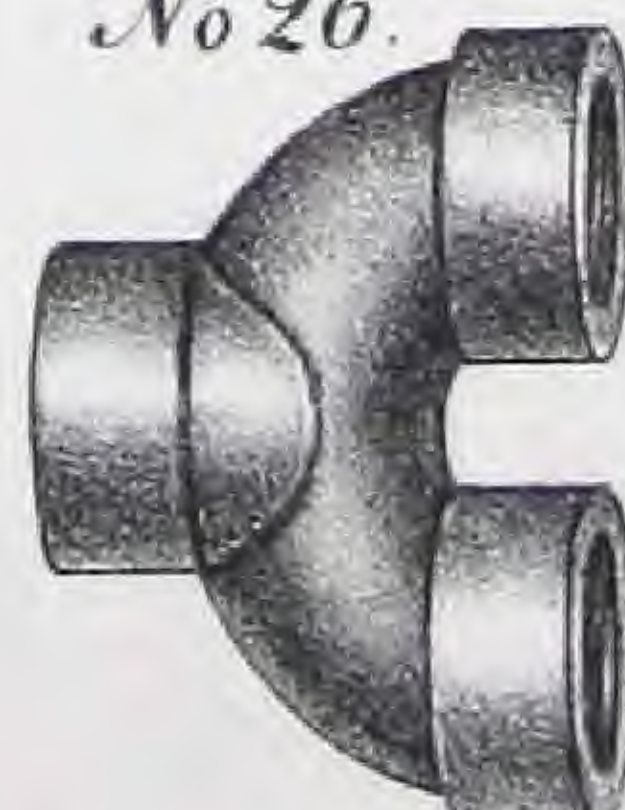


Crosses.



Globe Crosses, Reducing & Corner Fittings.

No 26.



Back Outlet Return Bend.



Square Return Bend.



Return Bend. No 24.



Return Bend.



Drop Elbow.



45° Elbow.

No 30.



Lateral Branch or Y.

No 27.



Side Outlet Return Bend.



Drop Tee.

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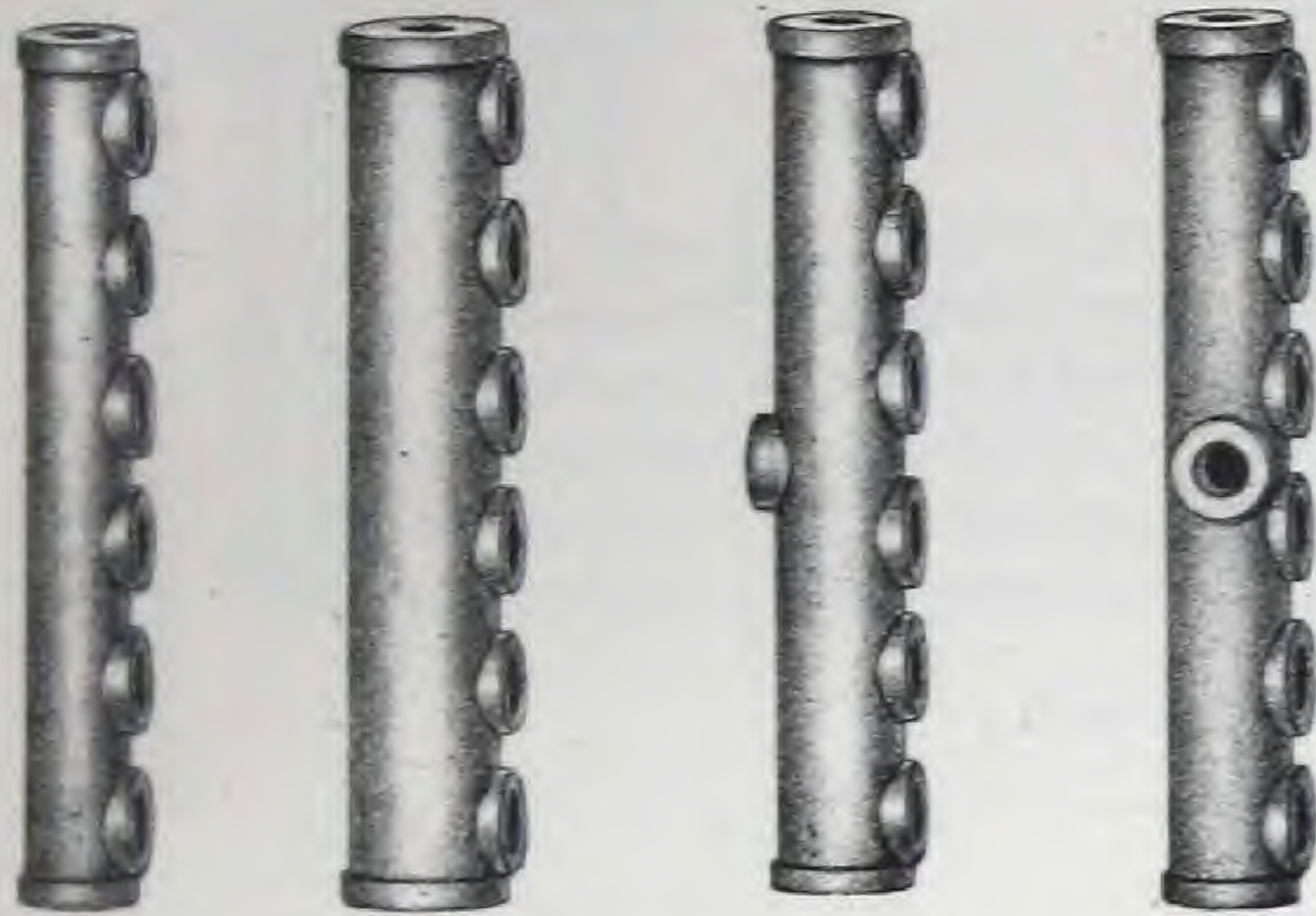
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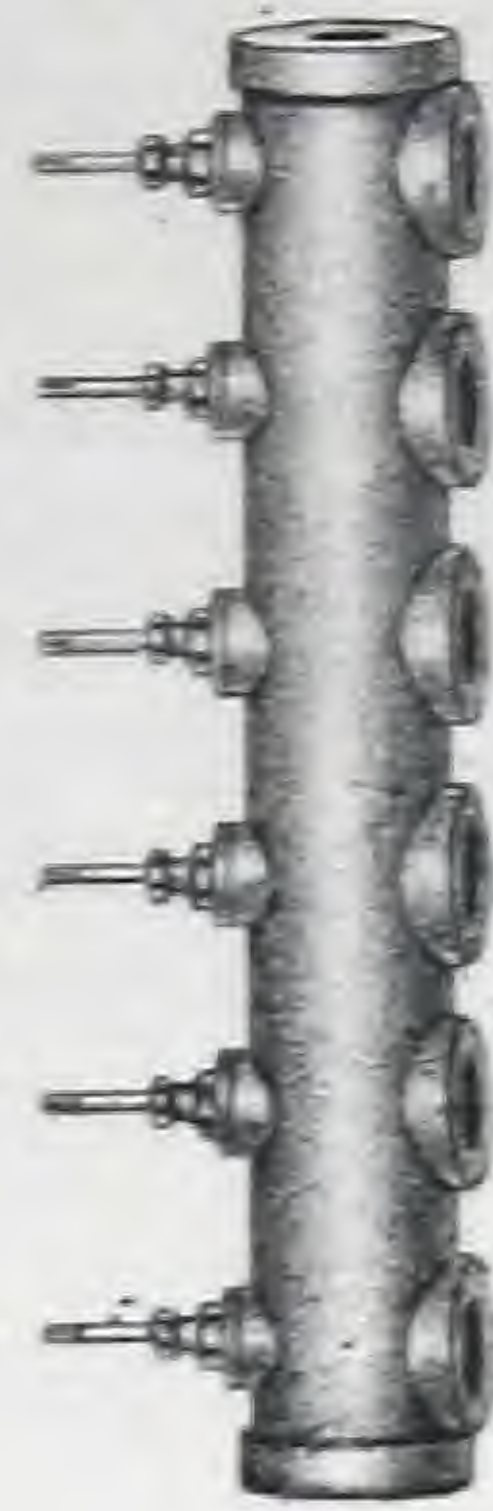
CLASS FIRST.

Plate 5

No 36. Manifolds.



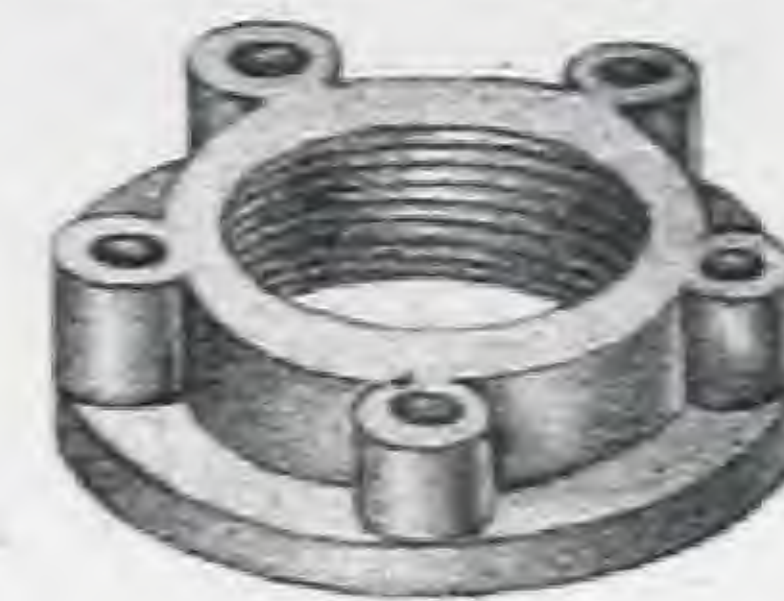
No 37 Valve Manifold.



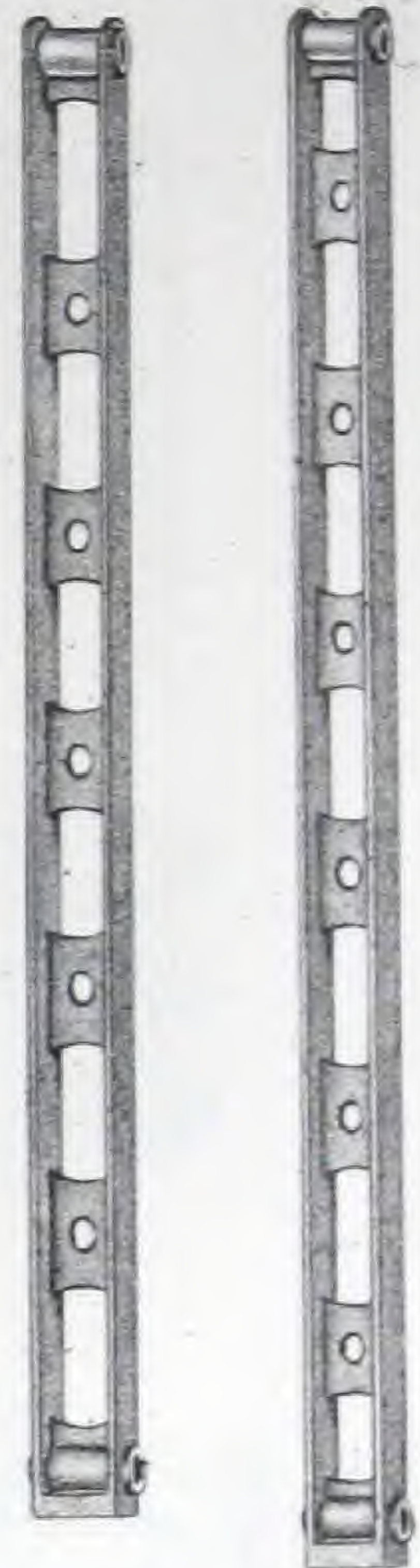
No 52. Flange.



No 54. Bossed Flange.



No 39. Pair of Coil Stands.



No 38.



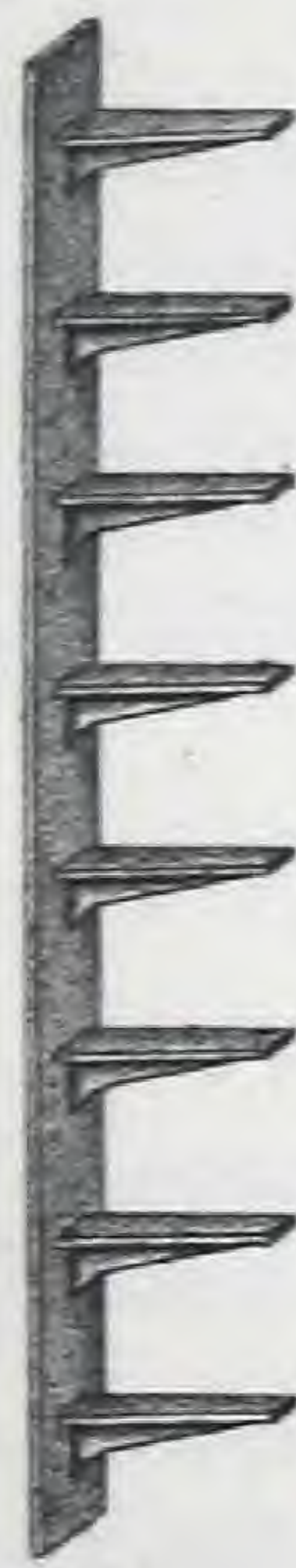
Double Manifold.

No 40.



Hook Plate.

No 42.



Corner Plate to allow Expansion.

No 48.



Projecting Single Ring Plate.

No 47.



Single Ring Plate.

No 47.



Single Hook Plate.

No 53.



Oval Flange.

No 56.



Collar.



No 49. Pipe Stand.

No 46.



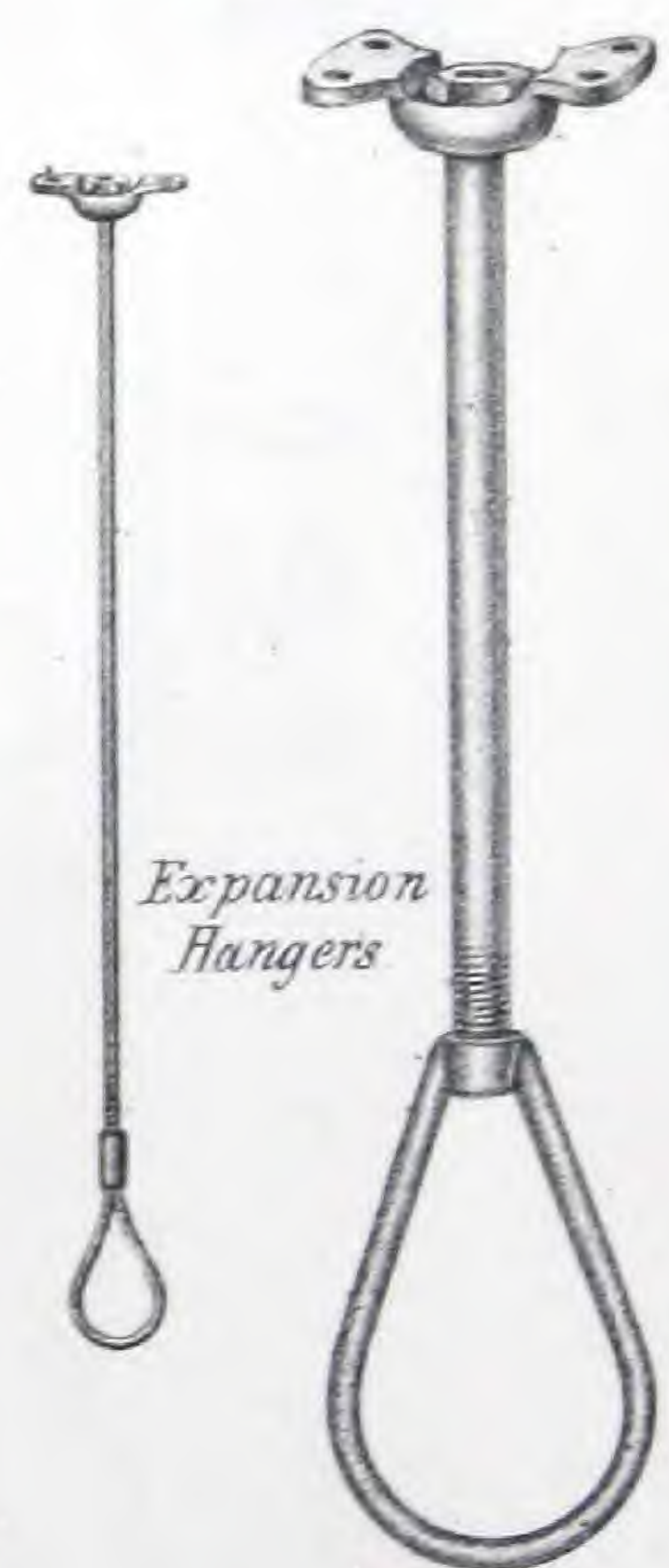
Movable Hook Plate for Laundry Coils.

No 57.



Double Expansion Hanger.

No 50.



Expansion Hangers.

No 55.



Flange Union with Bolts.

No 57.



Malleable Iron Union Joint.

No 44.



Wall Plate.

Ring Plate.

Rosette Plate.

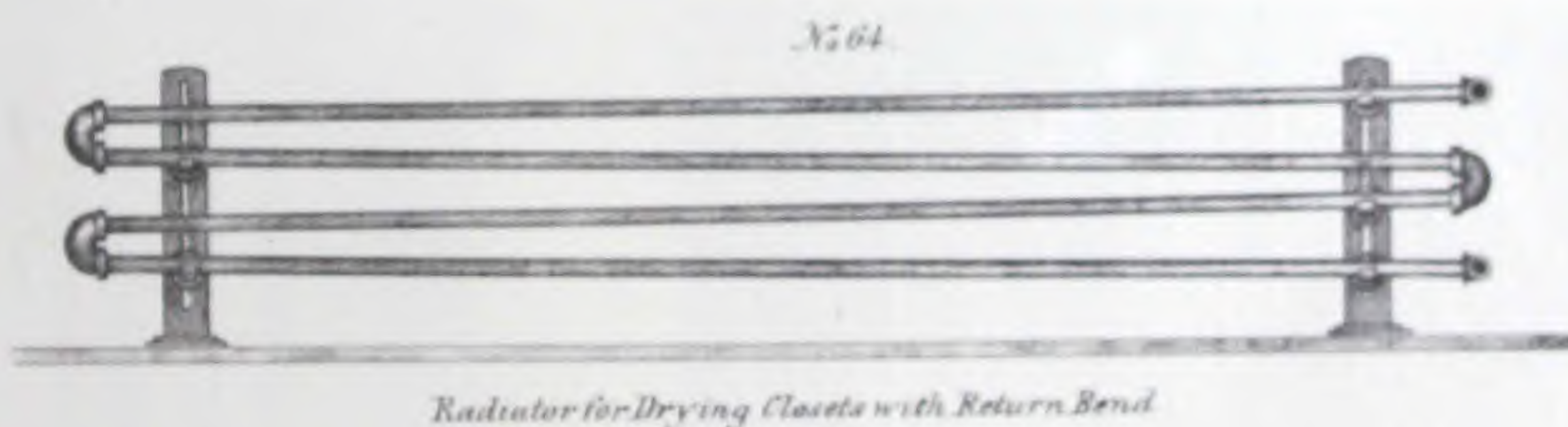
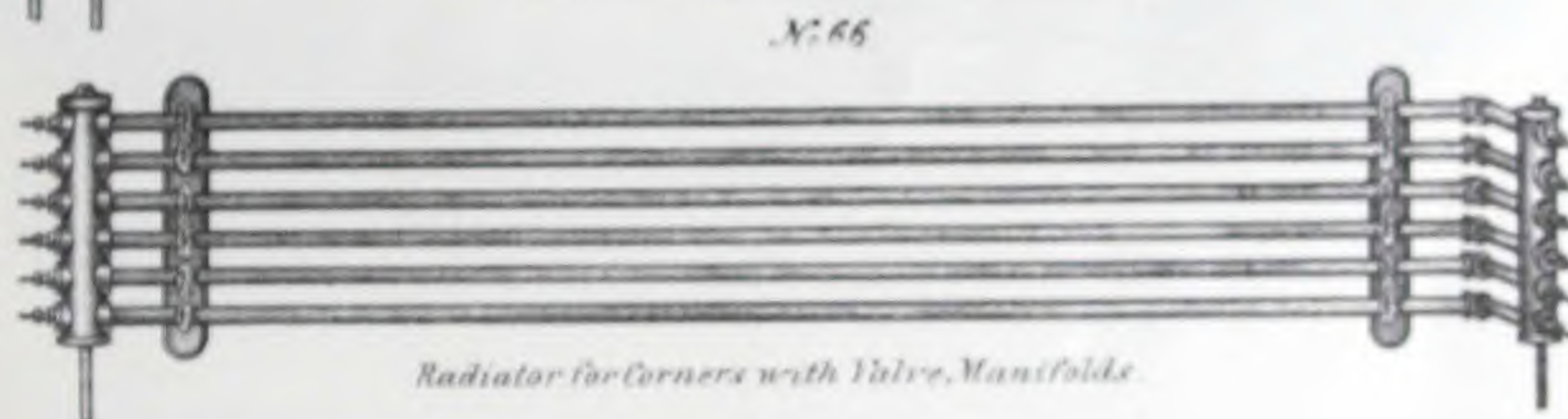
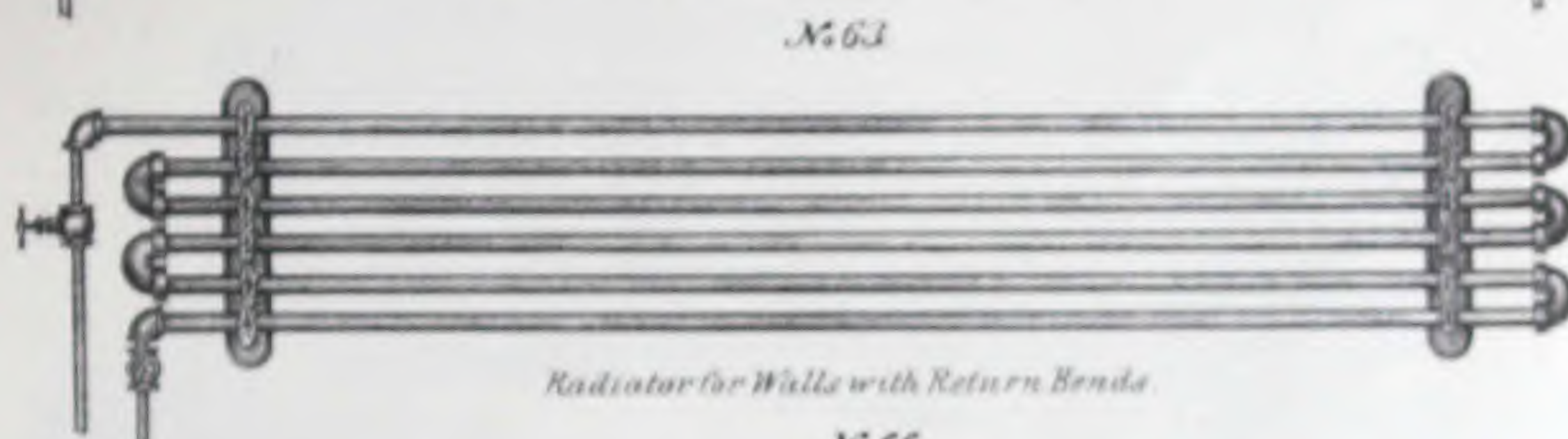
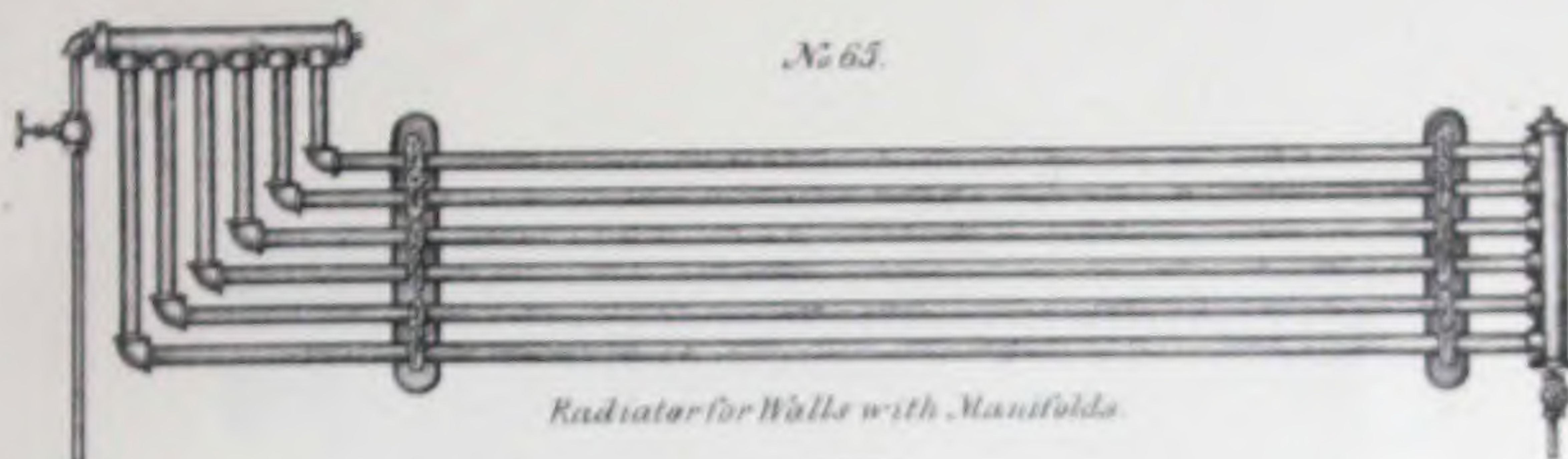


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Plate 6



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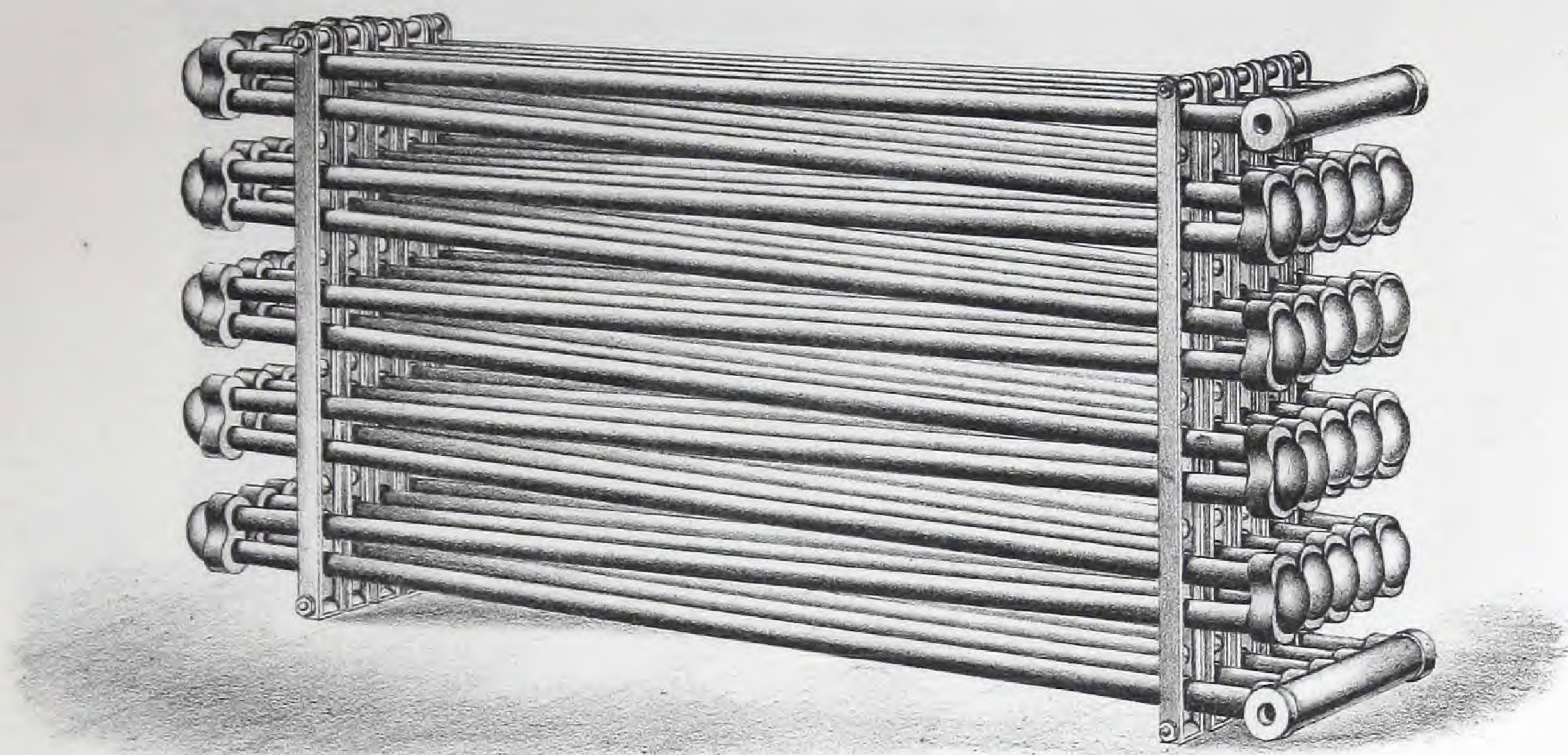
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Plate 7

N^o 70.



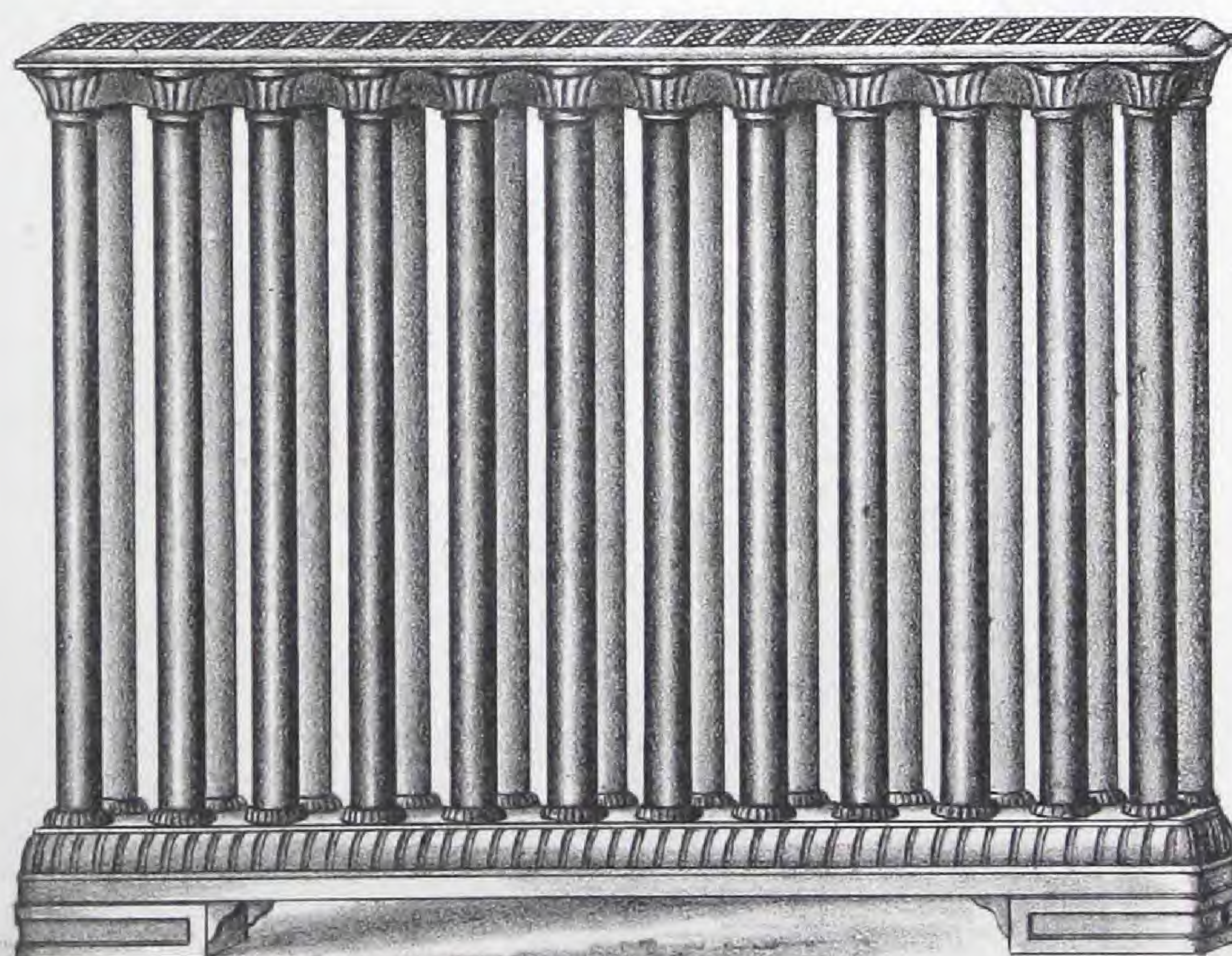
Return Bend or Box Coil.

N^o 73.



Circular Vertical tube Coil.

N^o 71.



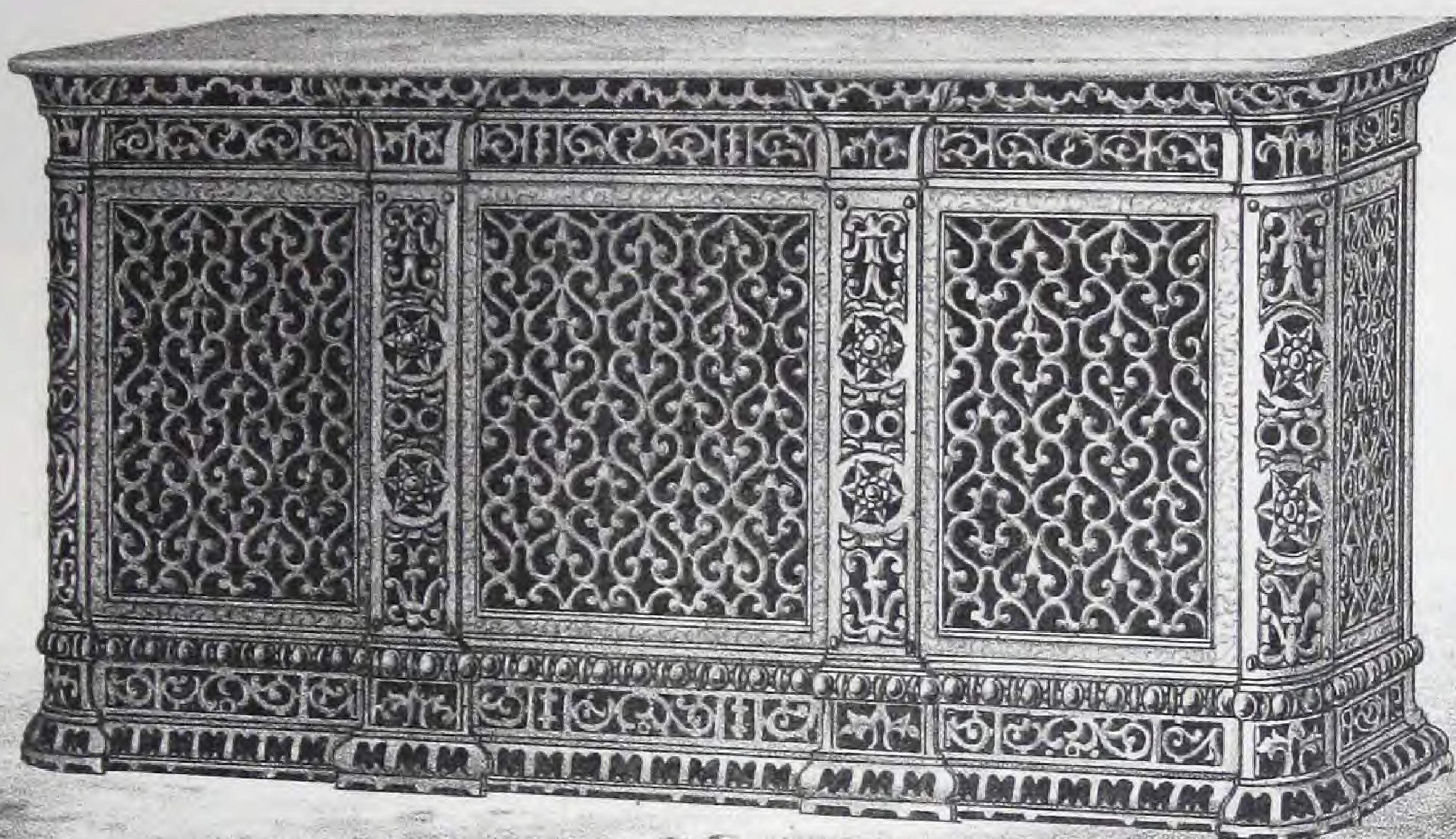
Vertical Tube Coil.

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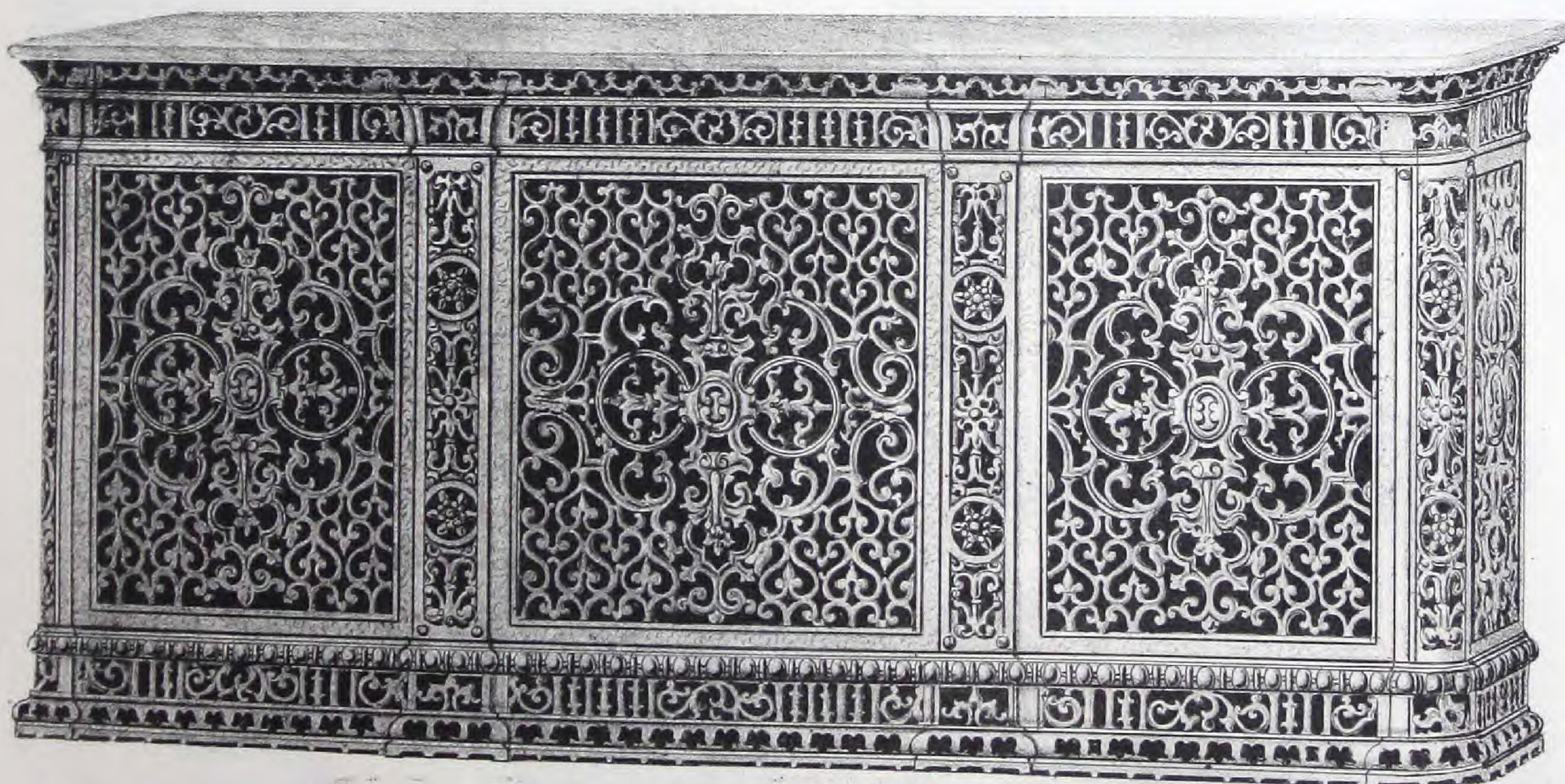
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N^o 77.



Coil Screen.

N^o 76.



Coil Screen.

STANDARD CATALOGUE

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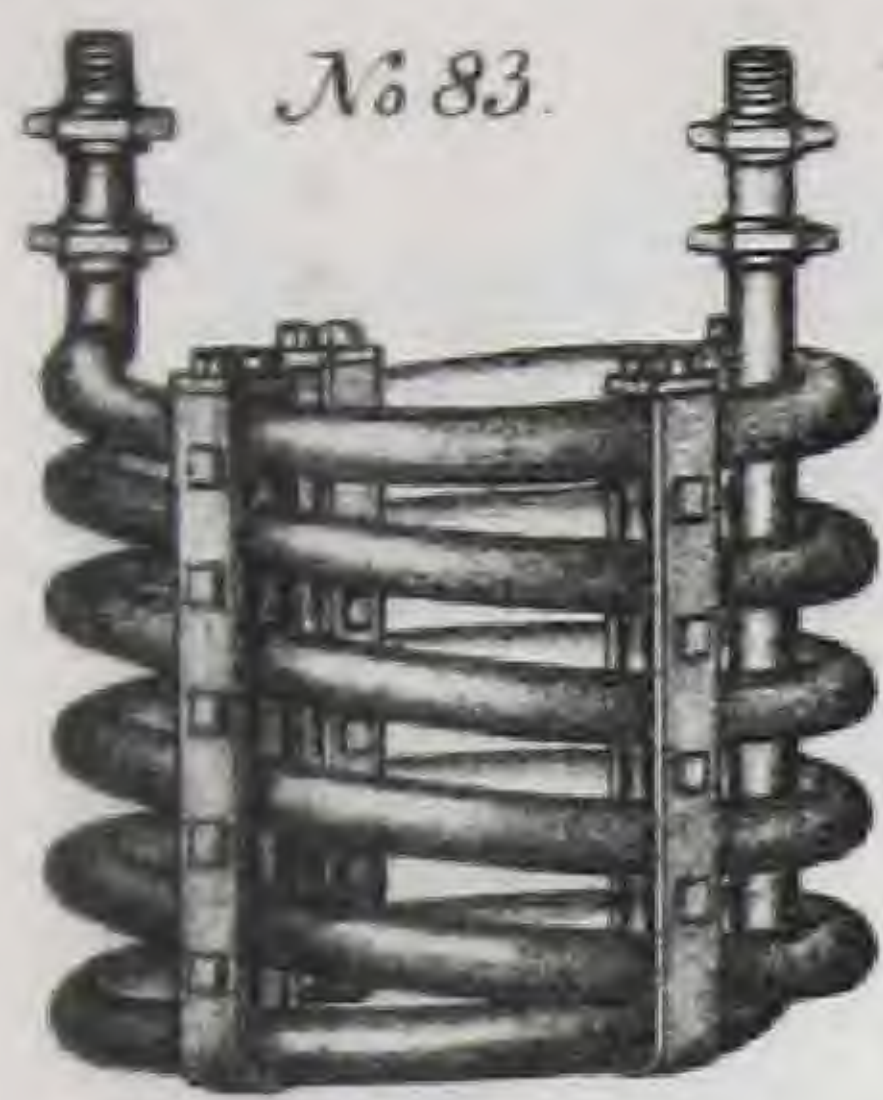
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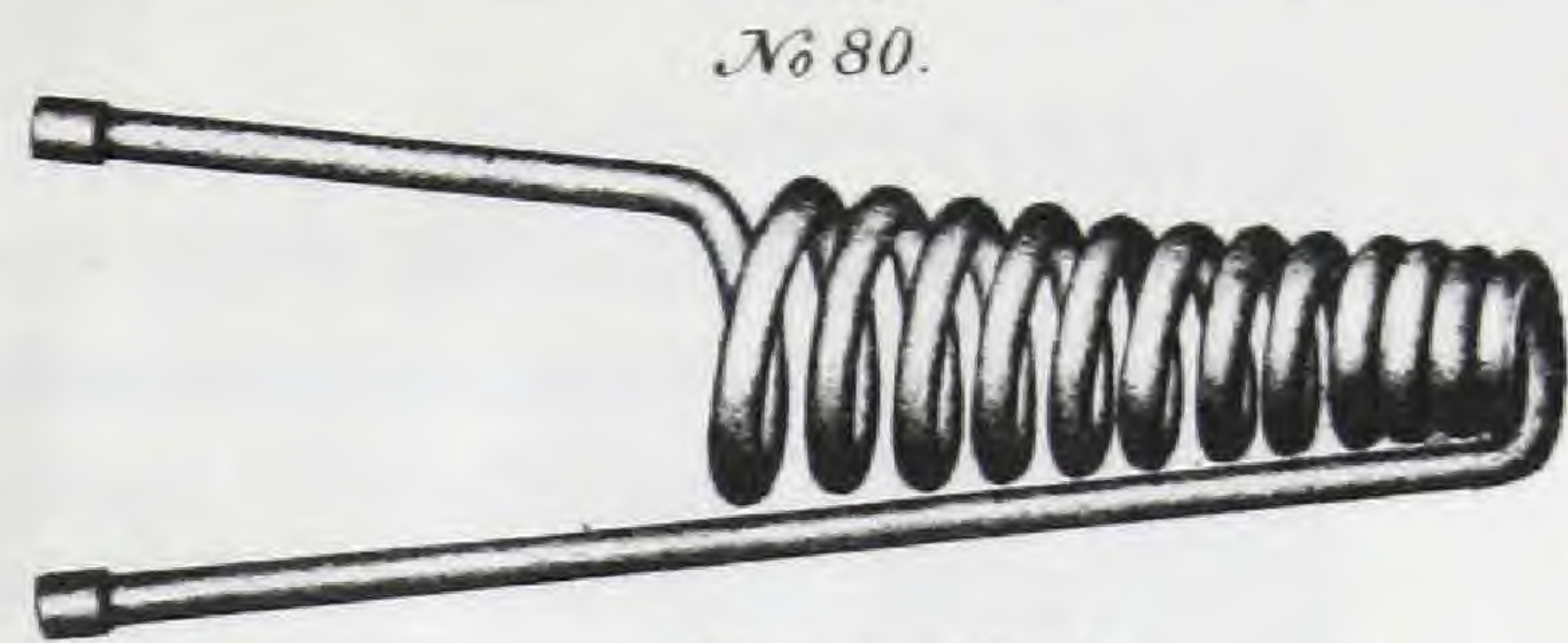
Plate 9



Heater Coil.



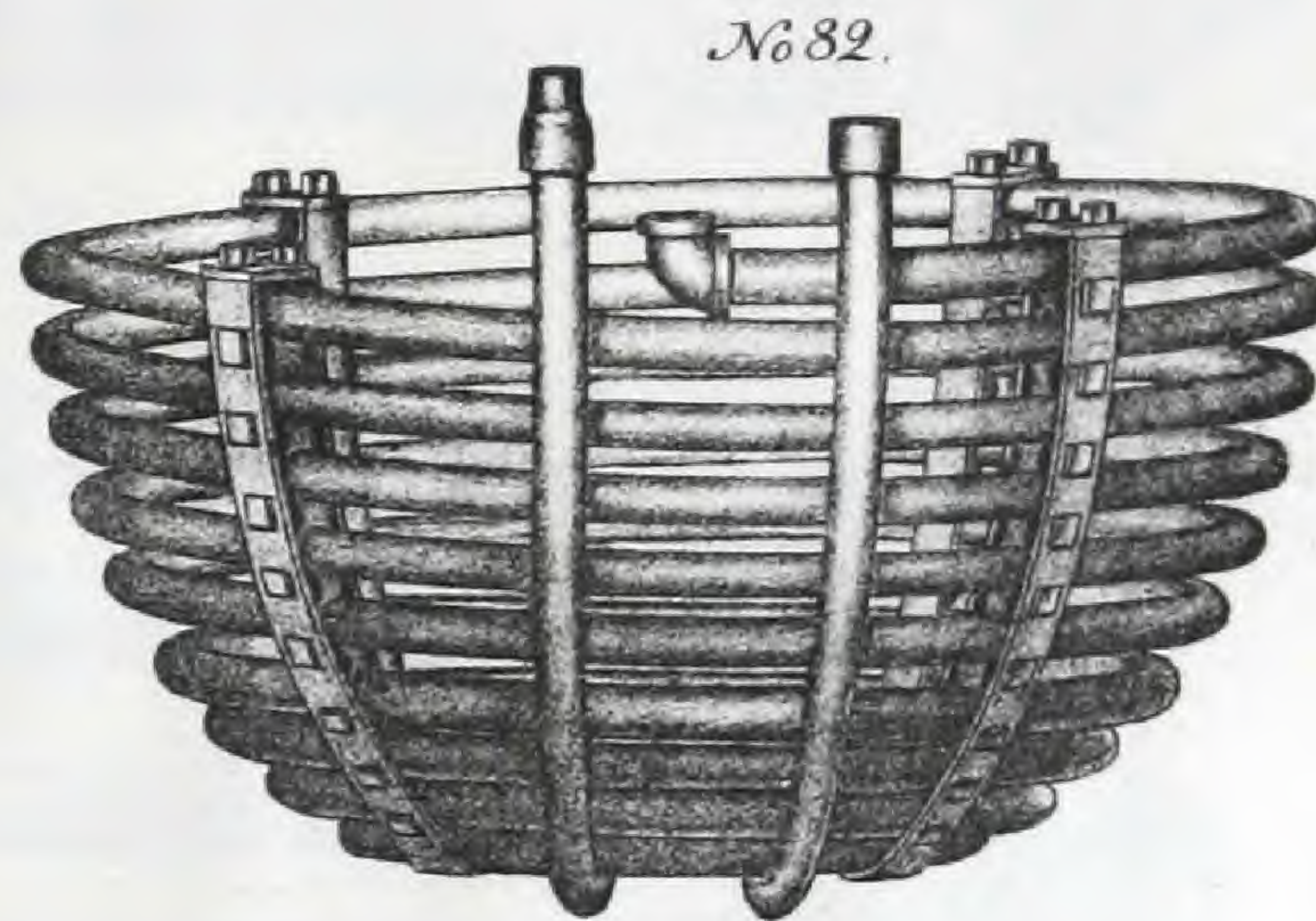
Heater Coil



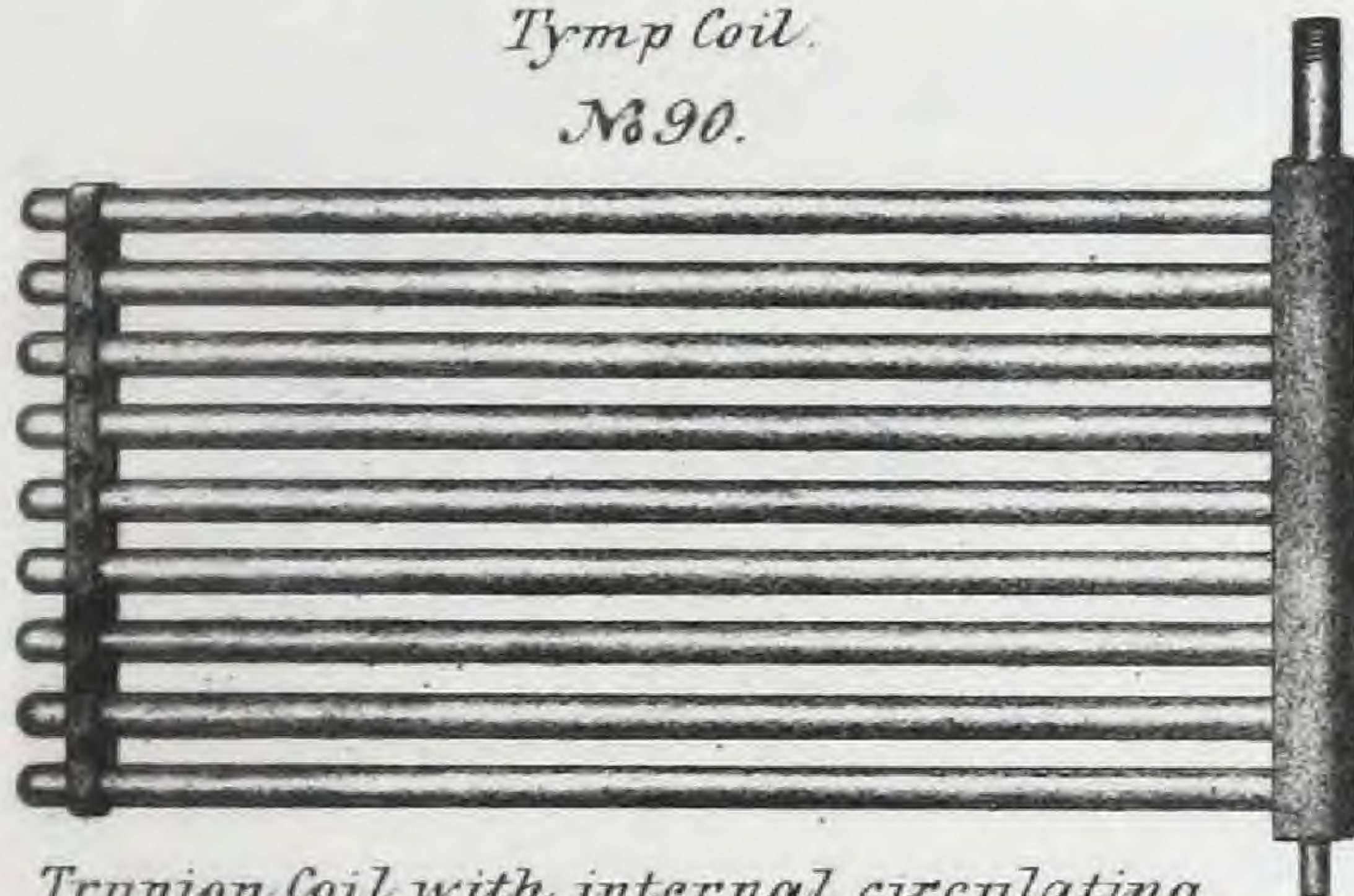
Tuyere Coil



Tymp Coil.
No. 89.



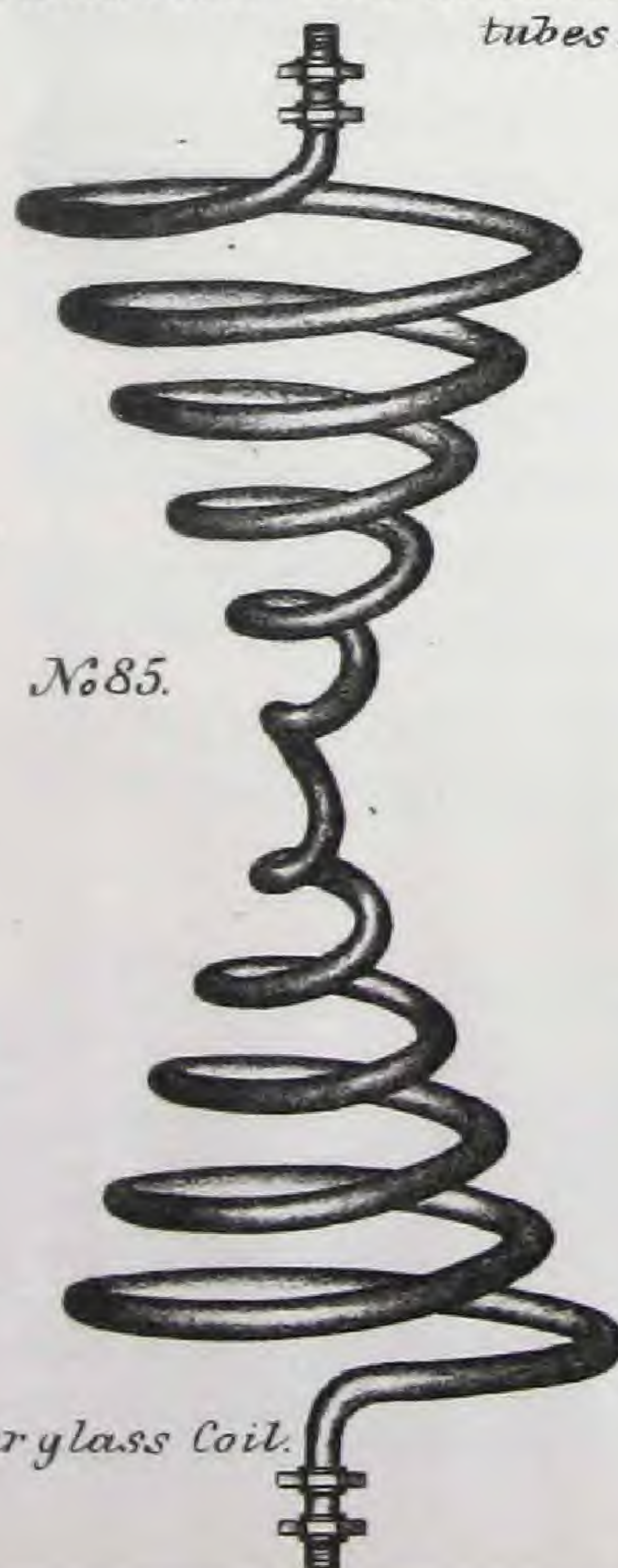
Soap Coil



Tranion Coil with internal circulating tubes.



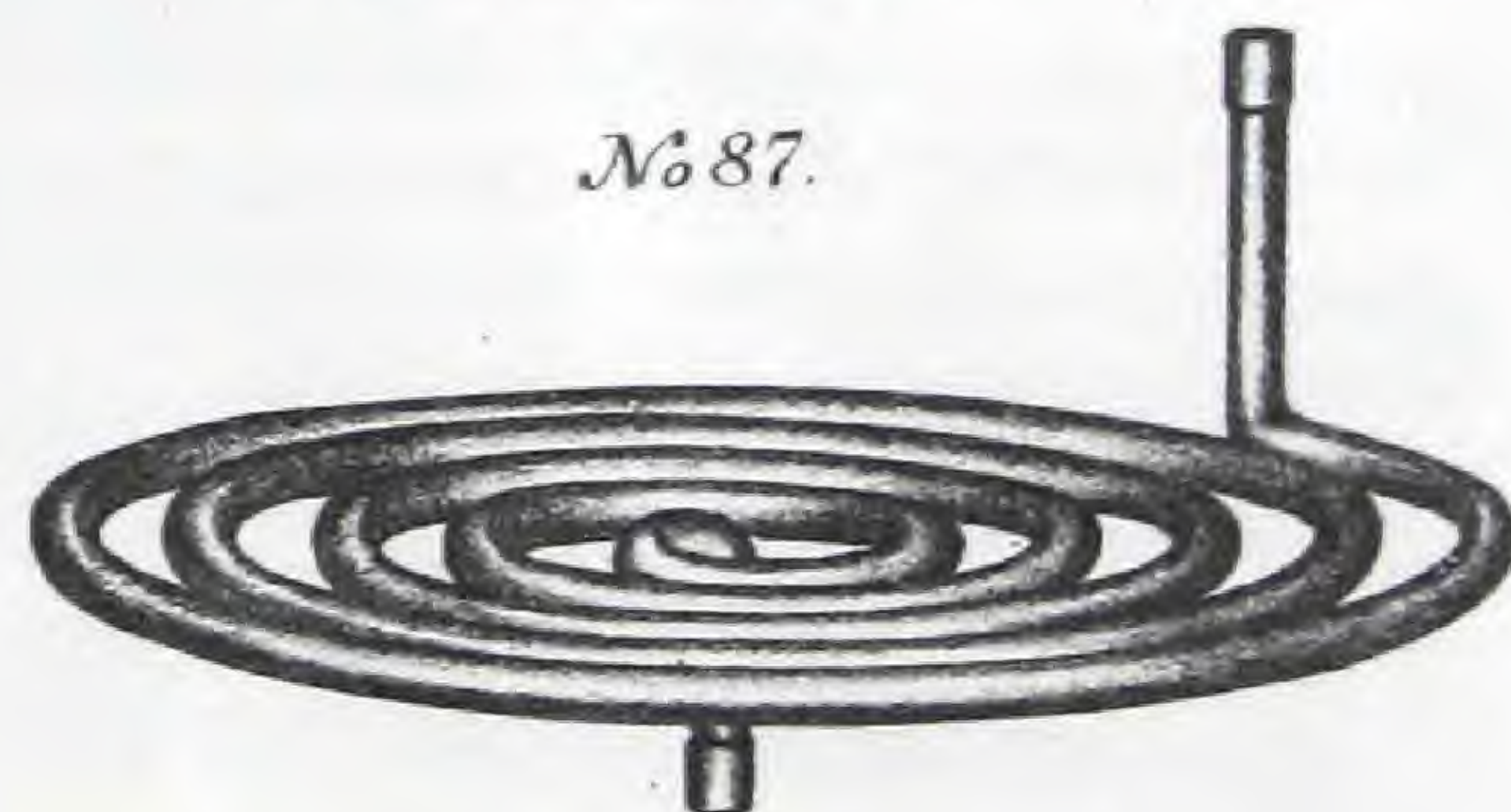
Helical Tank Coil.



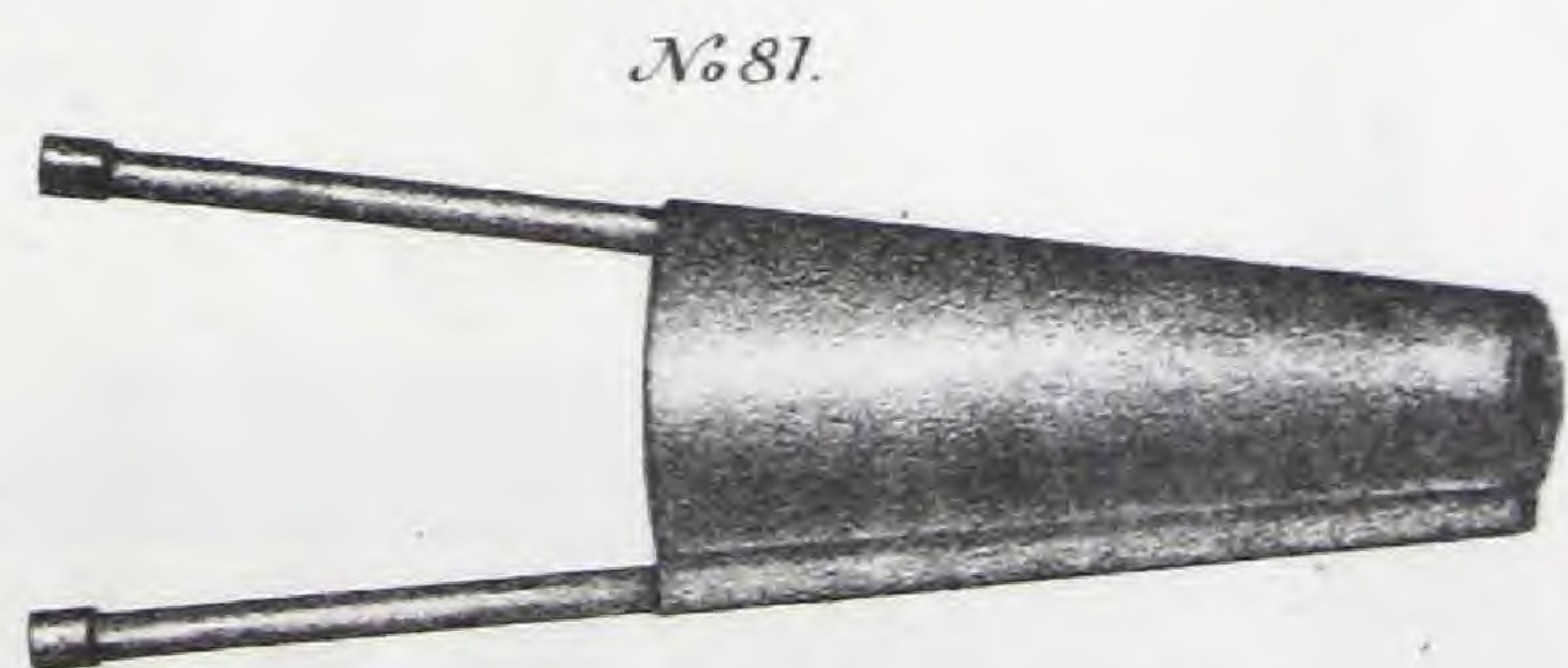
Hour glass Coil.



Double cone Coil.



Spiral Tank Coil.



Tuyers with Coil of wrought iron pipe.

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CCA

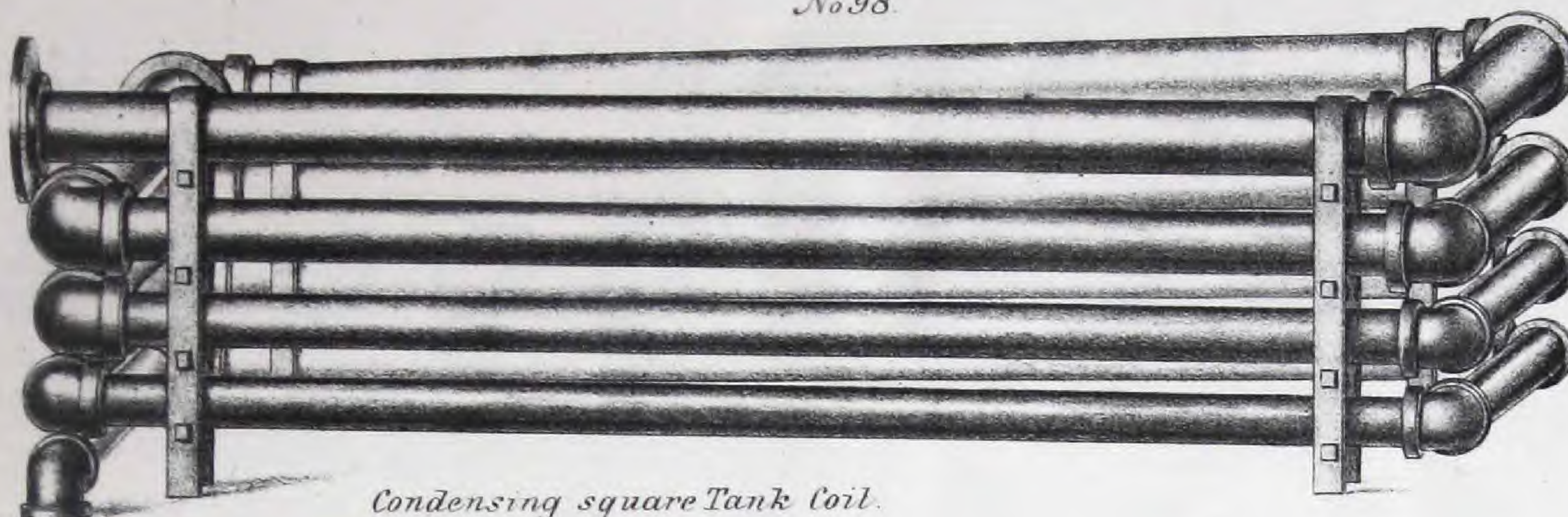
MORRIS, TASKER & CO'S ILLUSTRATED CATALOGUE.

10th EDITION

CLASS FIRST.

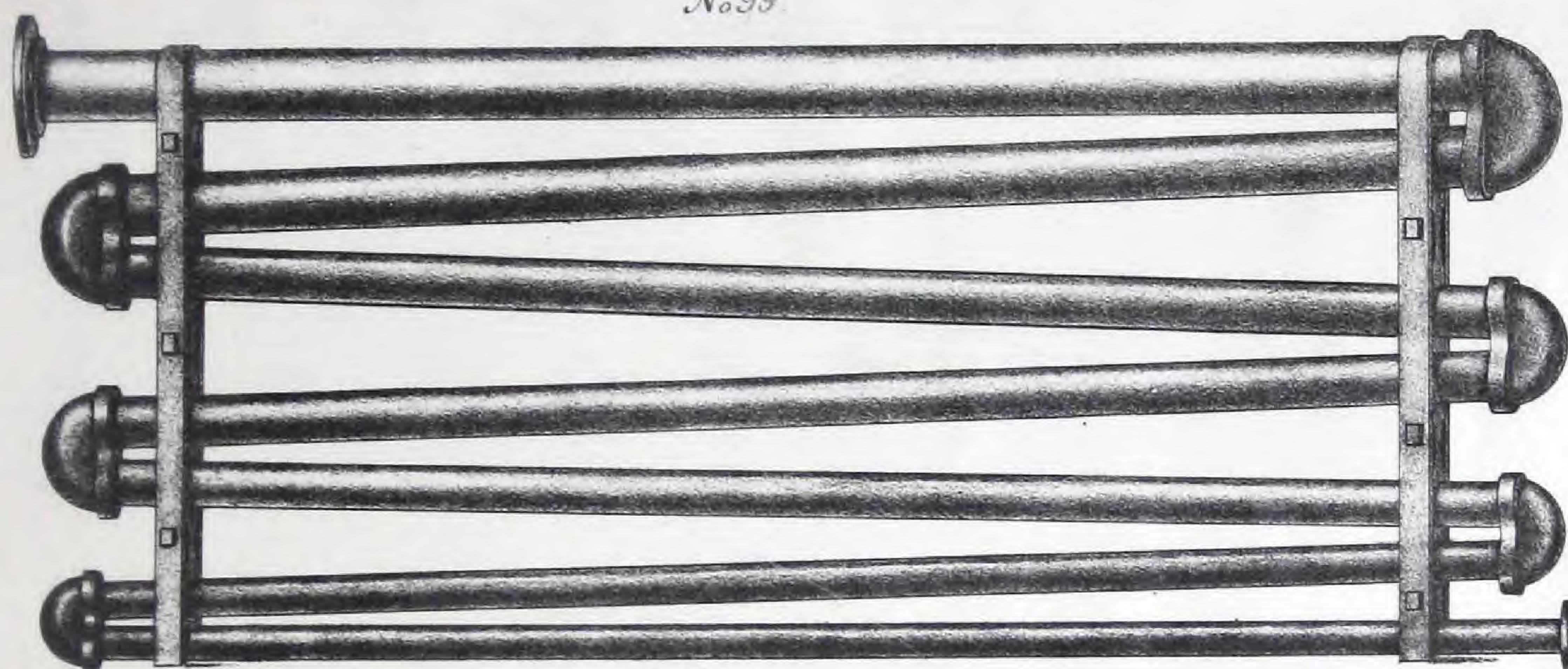
Plate 10.

No 98.



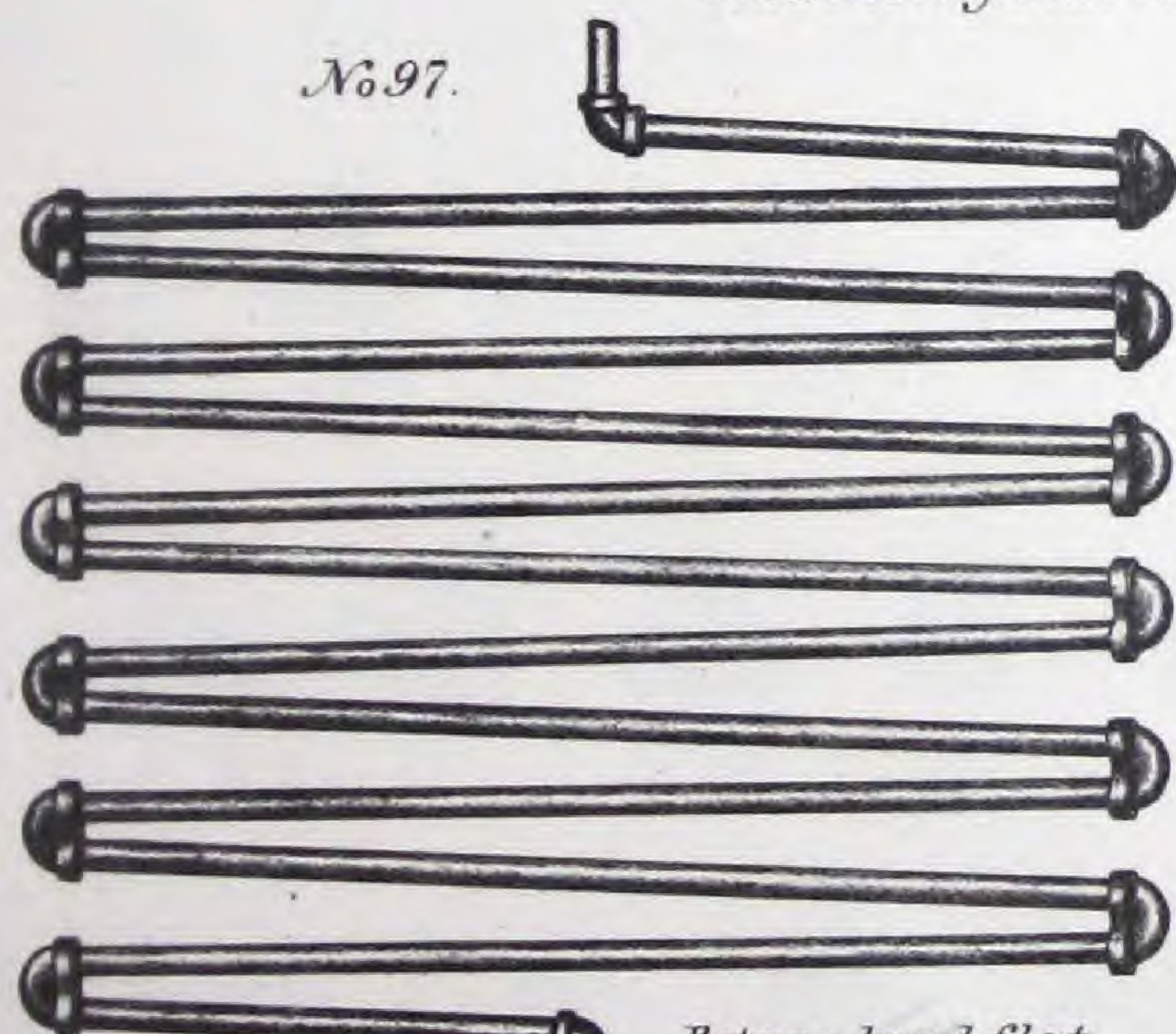
Condensing square Tank Coil.

No 99.

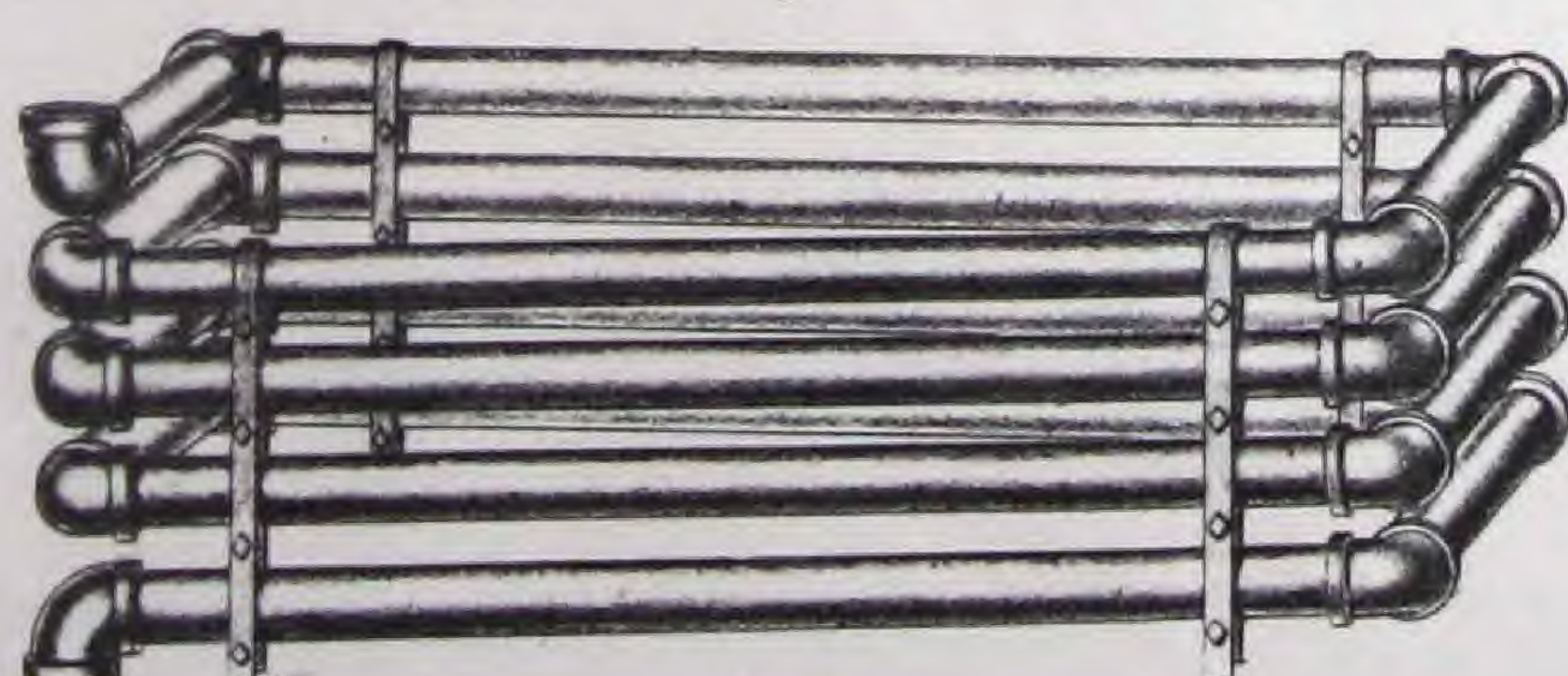


Condensing flat return bend Coil.

No 97.

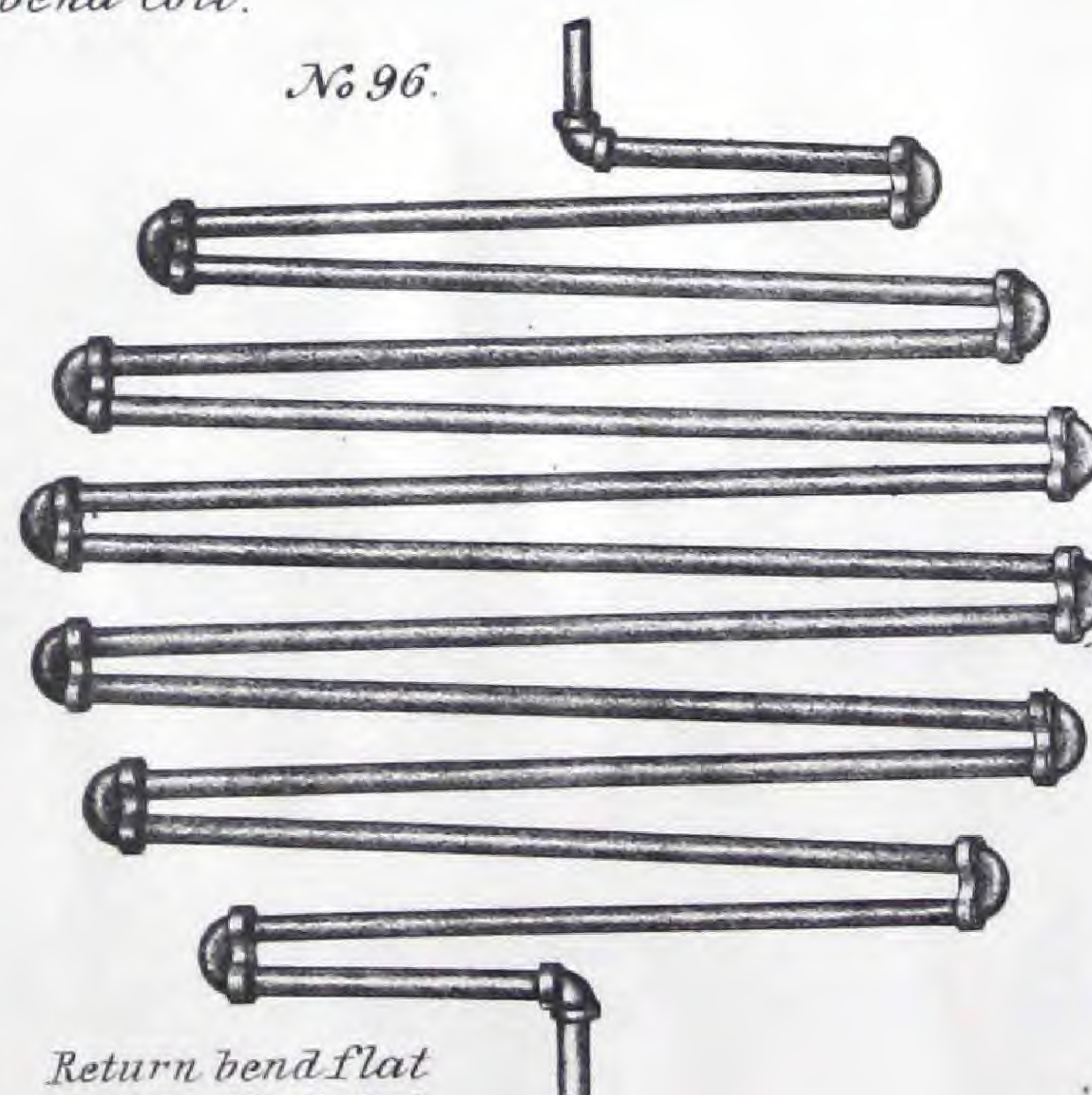


No 100.



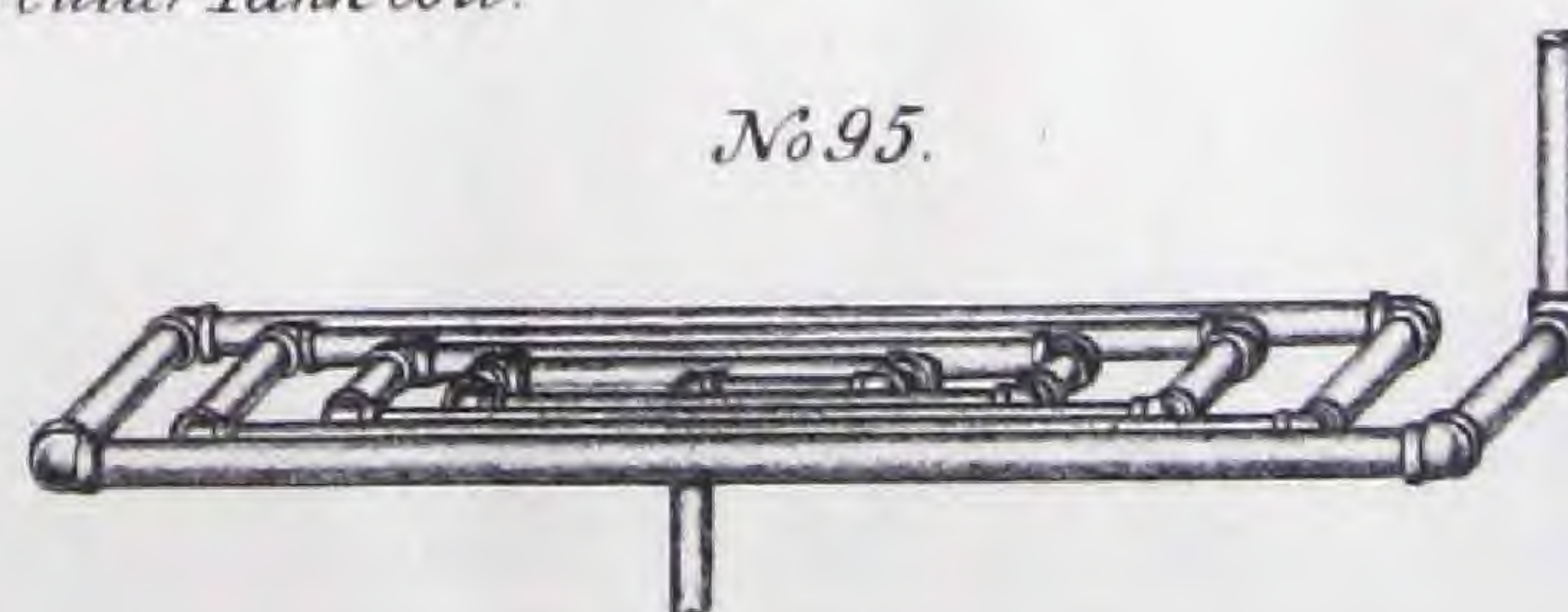
Square Tank Coil.

No 96.



Return bend flat circular Tank Coil.

No 95.



Square spiral Tank Coil.

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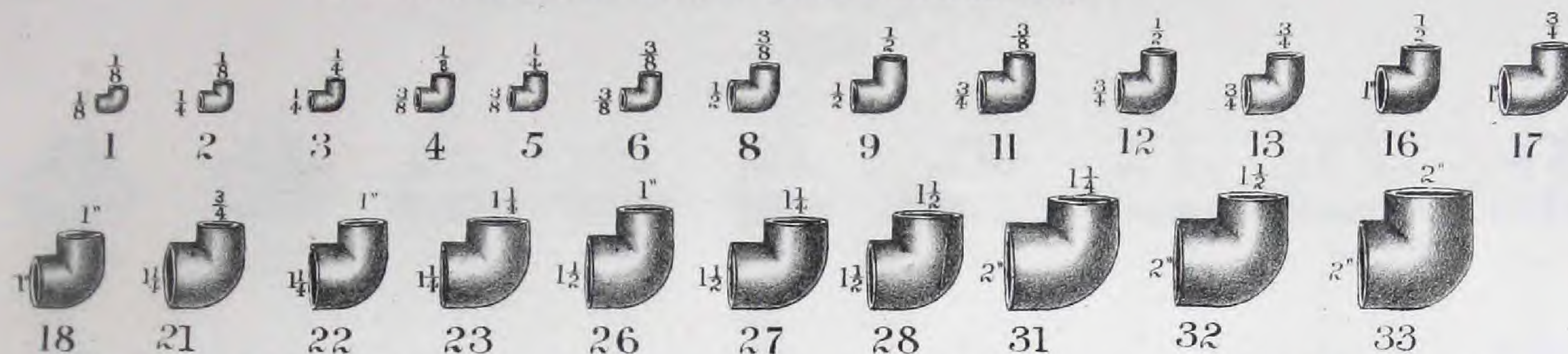
MORRIS, TASKER & CO'S ILLUSTRATED CATALOGUE.

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CLASS FIRST.

Plate 12.

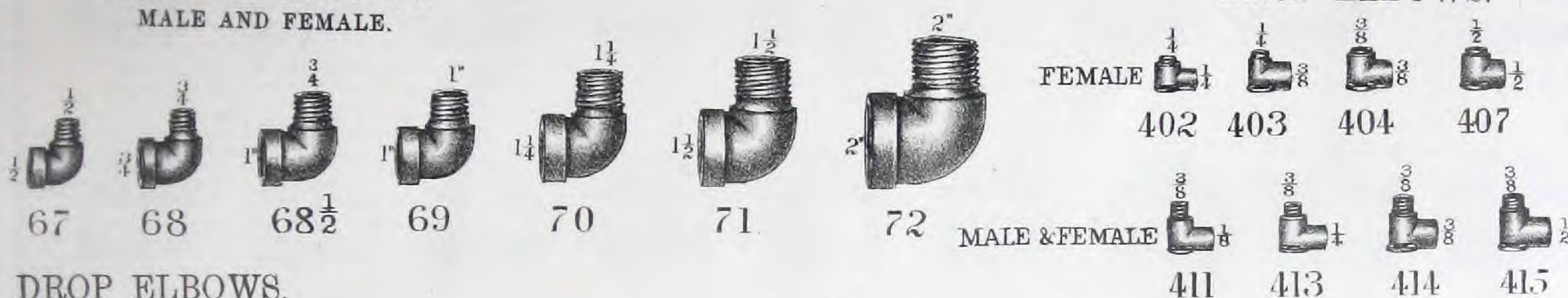
MALLEABLE IRON GAS FITTINGS.



SERVICE ELBOWS.

MALE AND FEMALE.

DROP ELBOWS.

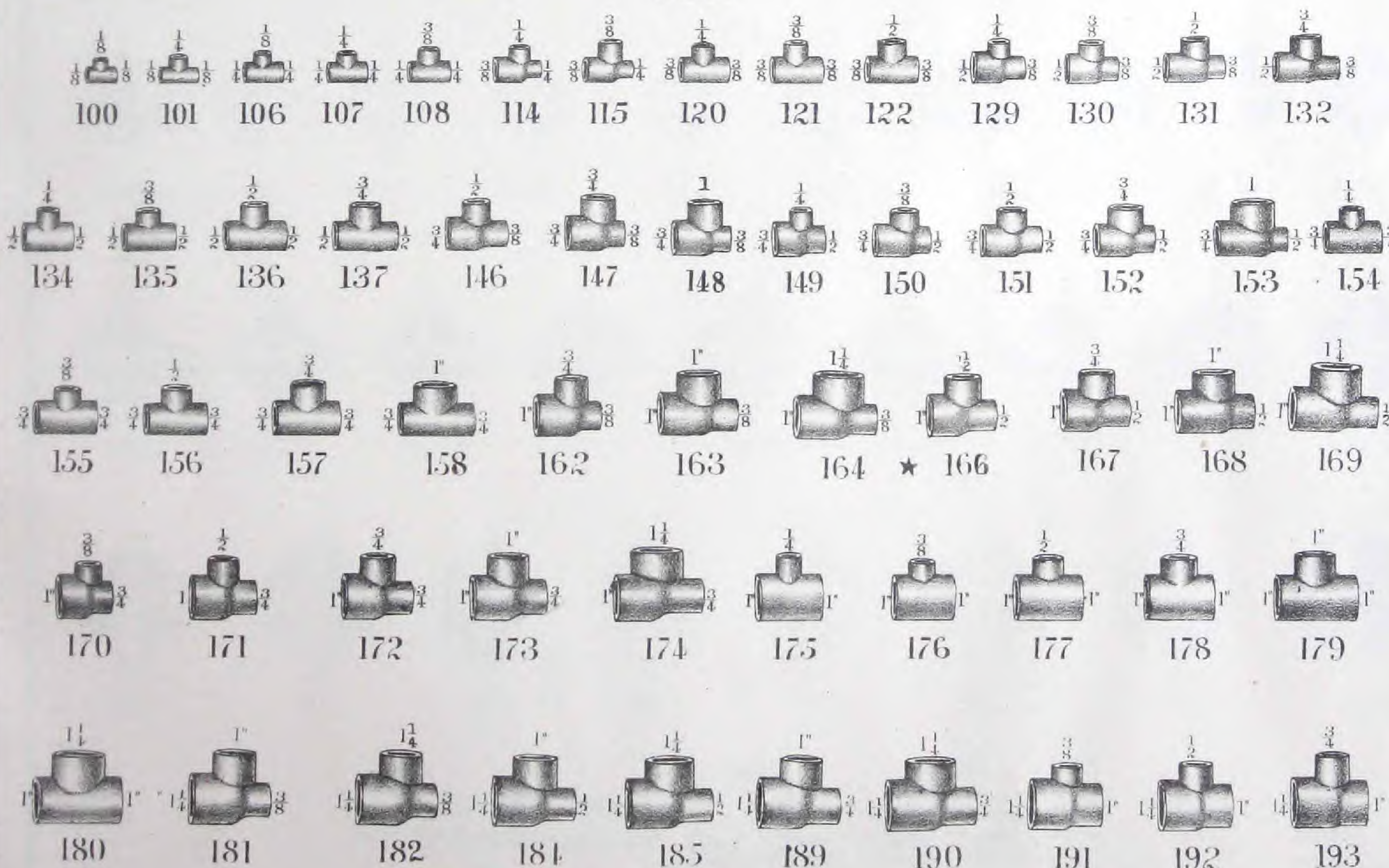


DROP ELBOWS.

LONG OUTLET.

ELBOWS WITH SIDE OUTLETS.

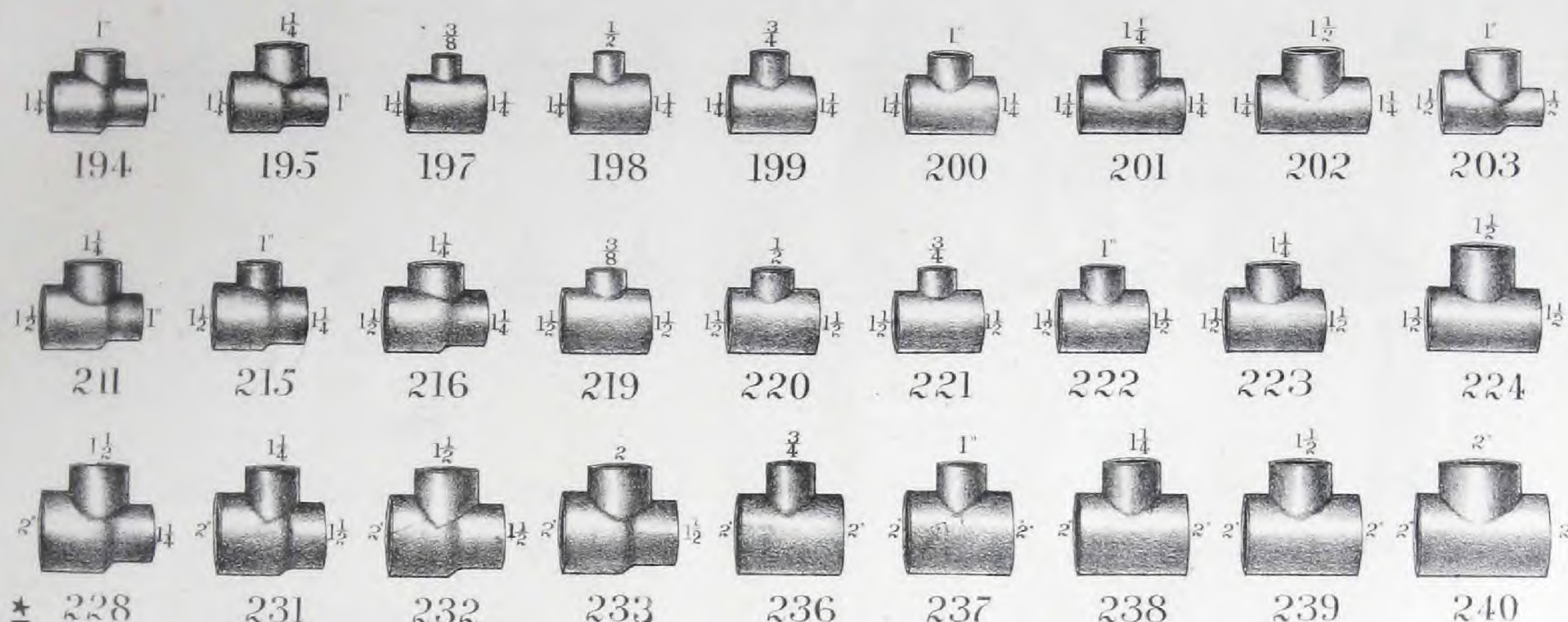
TEES.



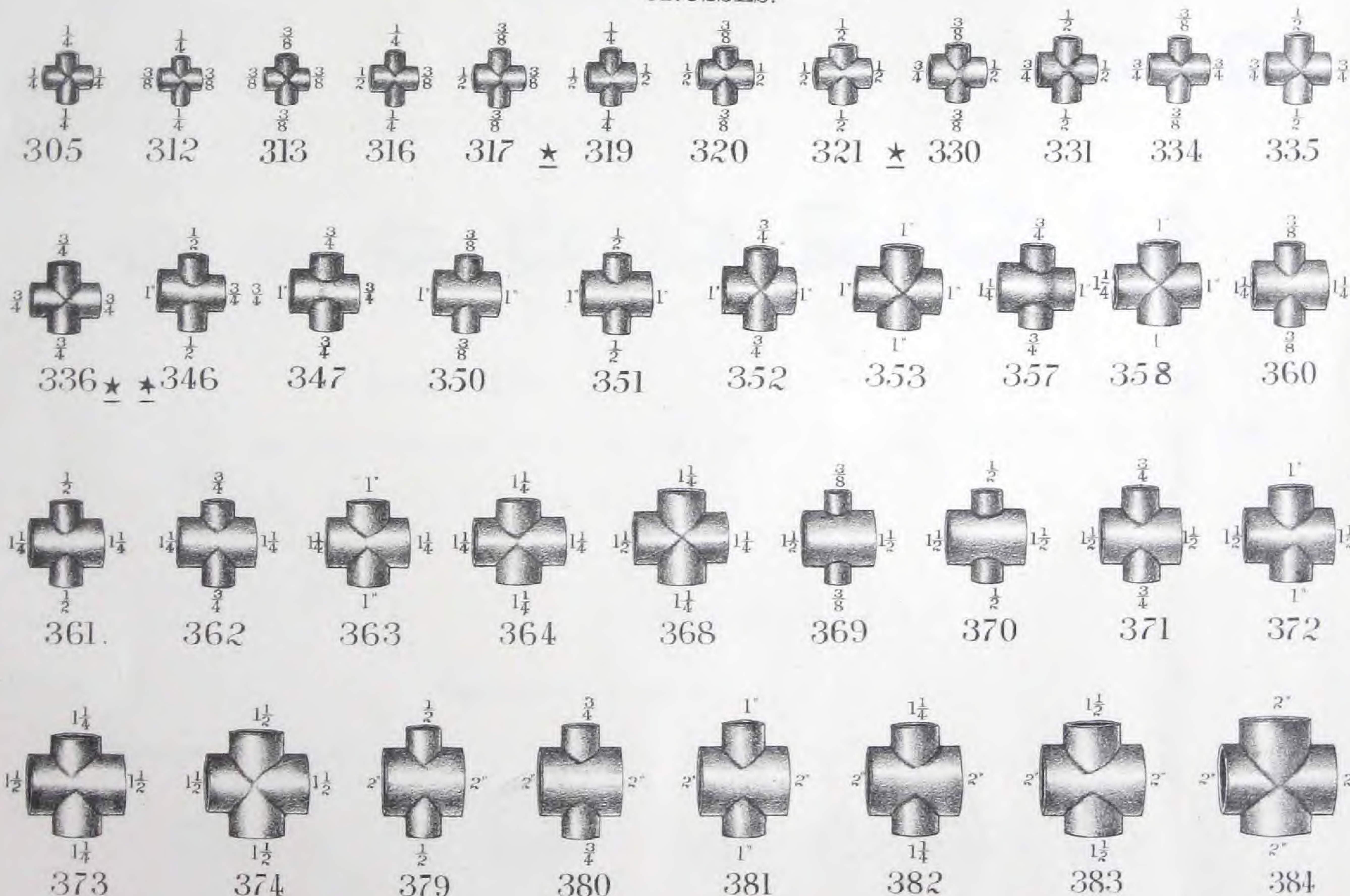
★ See Plate 14.

MALLEABLE IRON GAS FITTINGS.

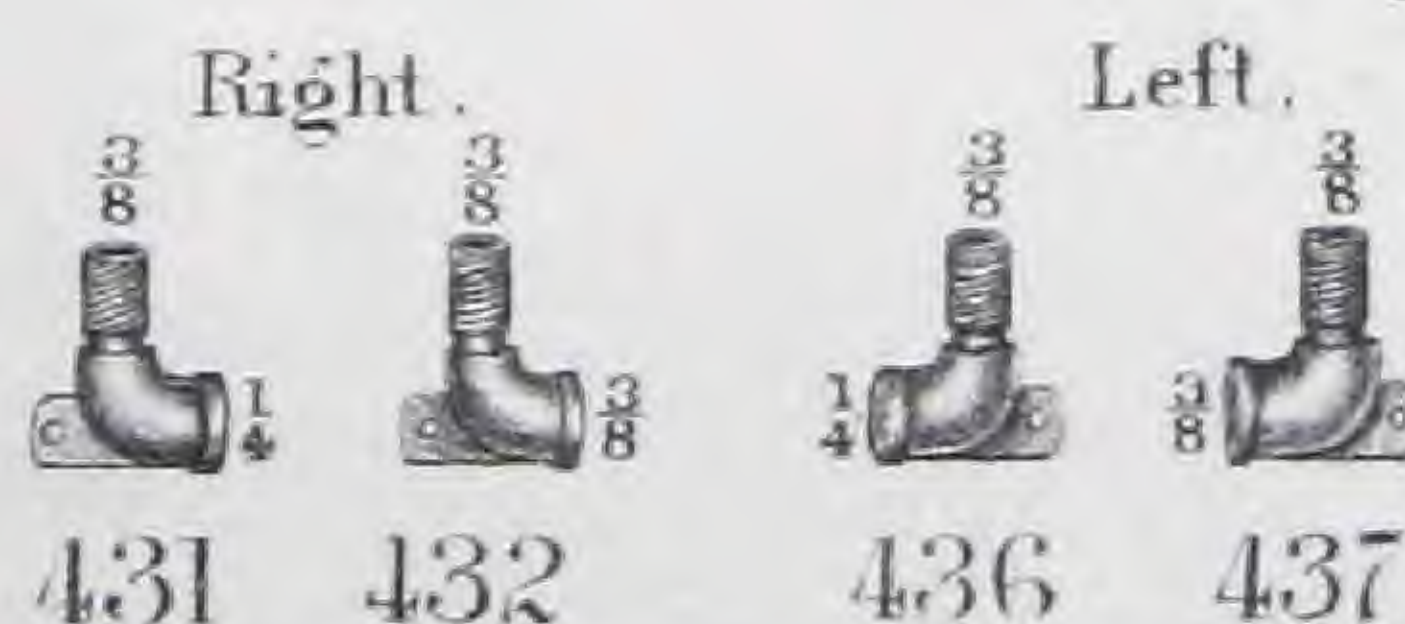
TEES.

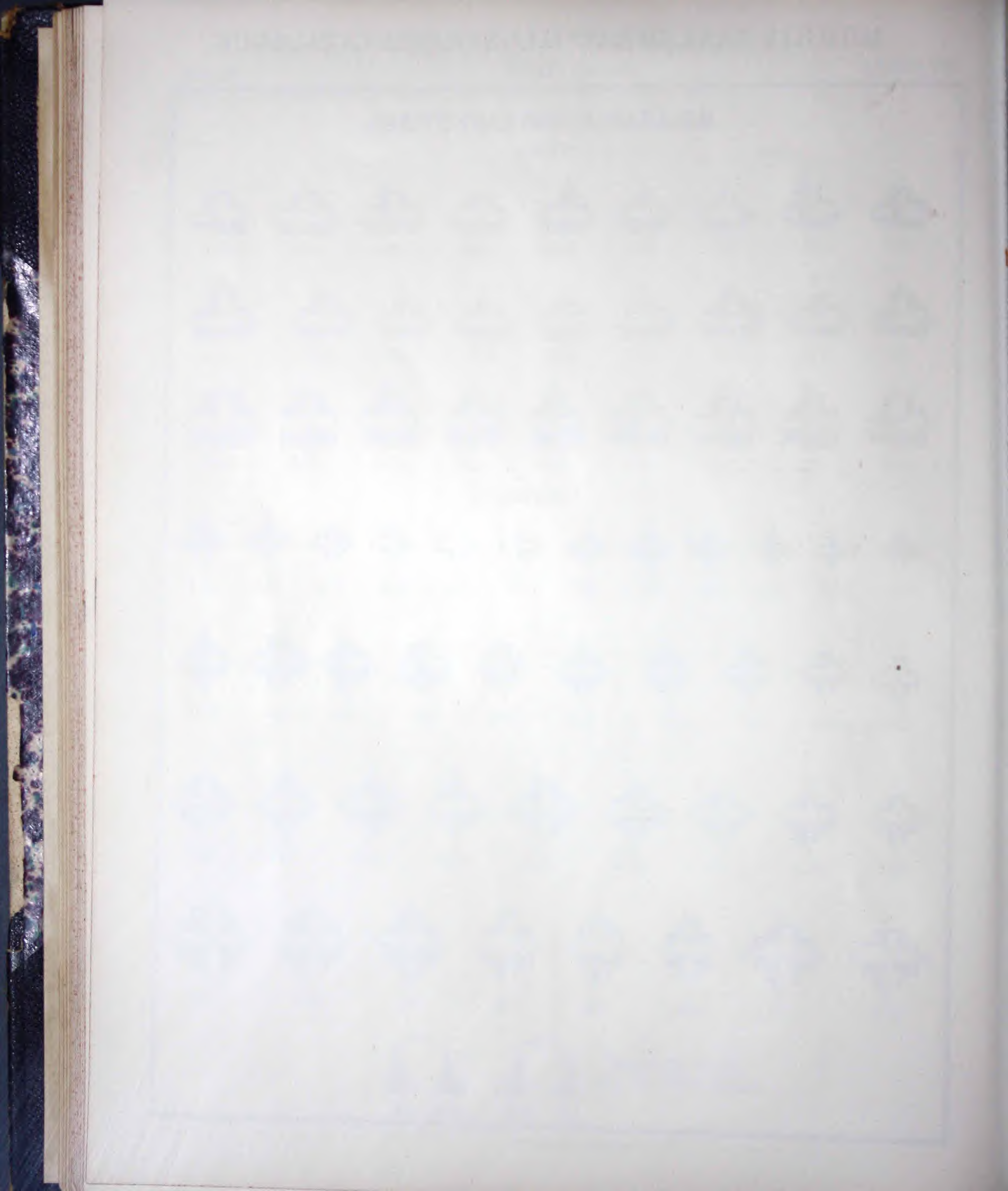


CROSSES.



DROP ELBOWS. FLANGES RIGHT AND LEFT.





MORRIS, TASKER & CO'S ILLUSTRATED CATALOGUE.

10th EDITION

CLASS FIRST.

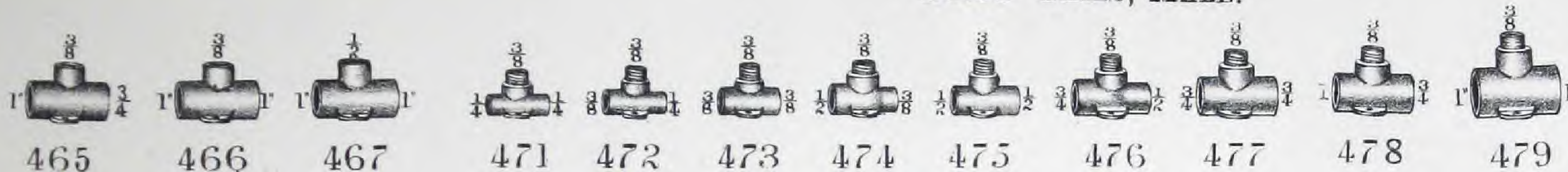
Plate 14.

MALLEABLE IRON GAS FITTINGS.

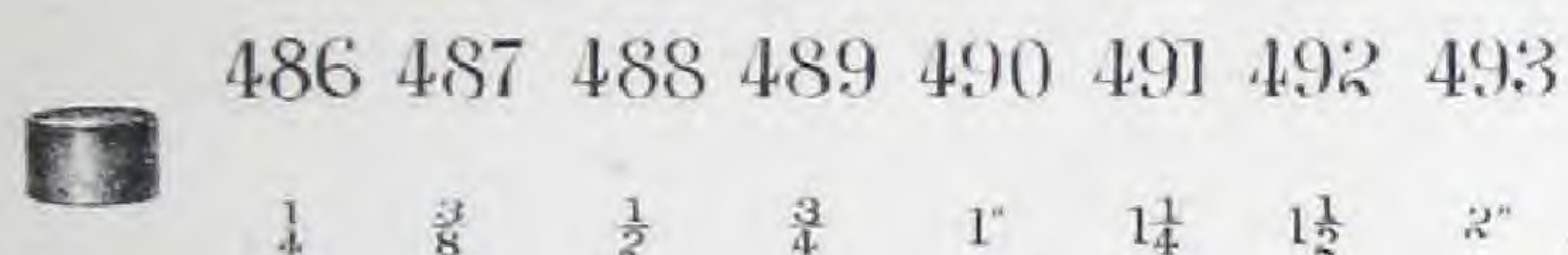
DROP TEES, FEMALE.



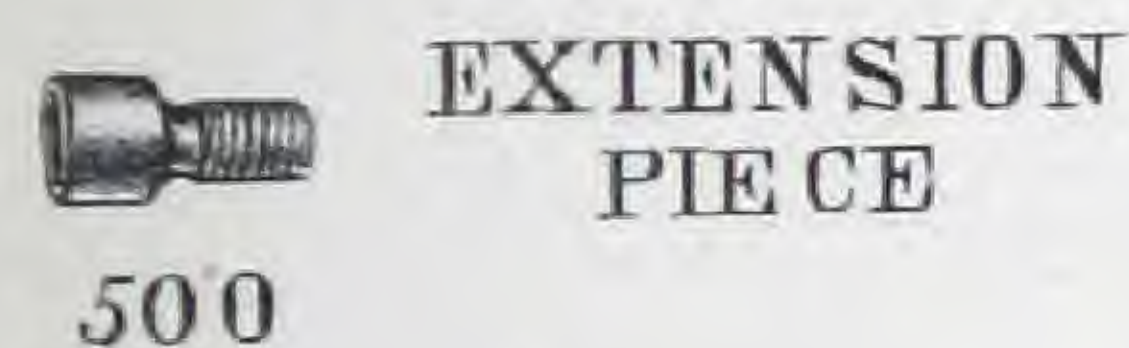
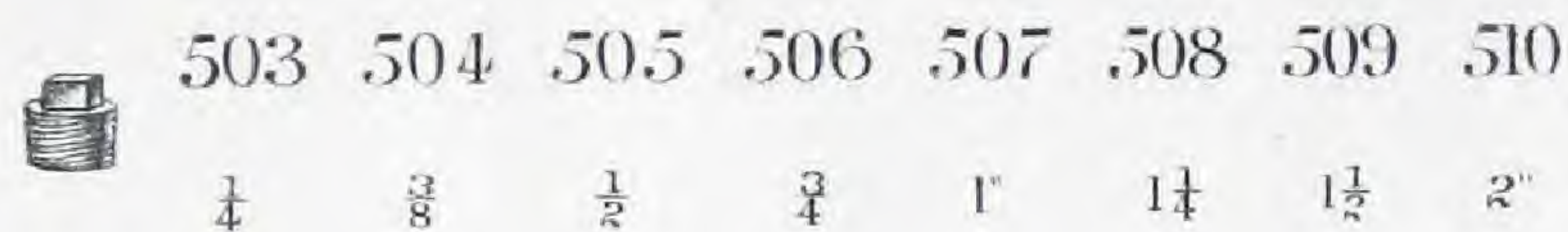
DROP TEES, MALE.



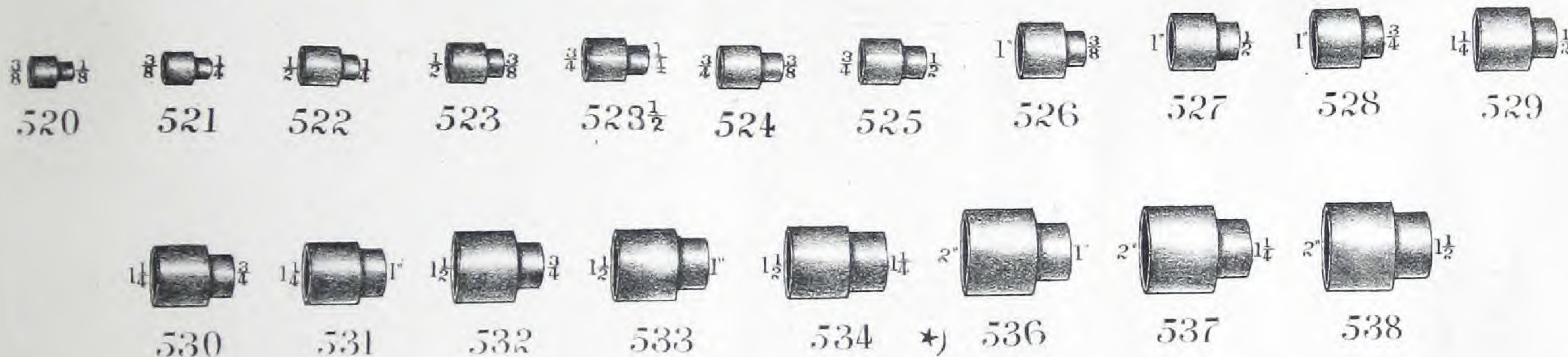
CAPS.



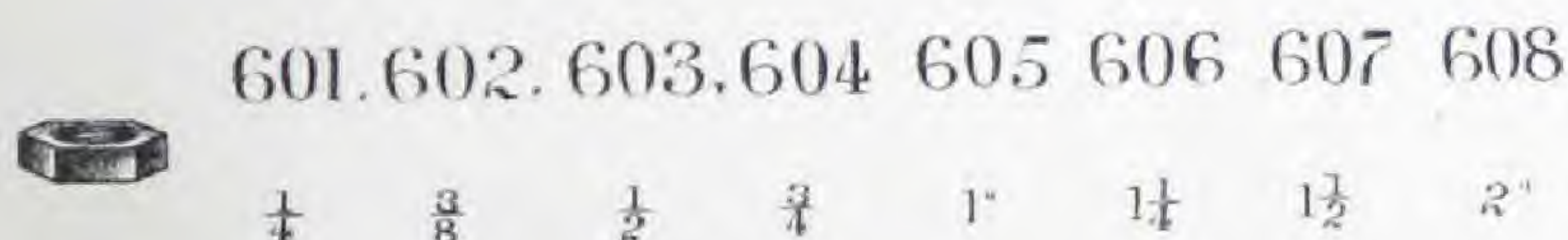
PLUGS.



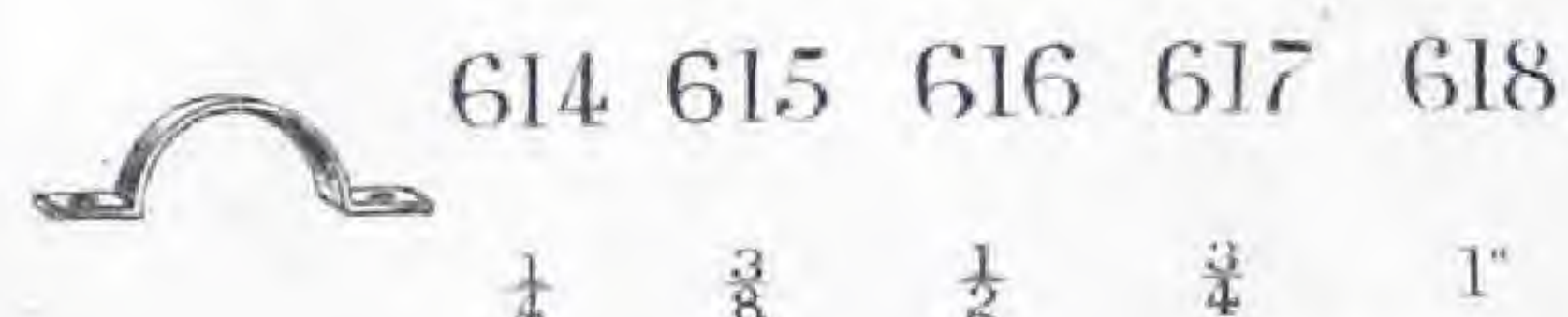
REDUCING SOCKETS.



LOCK NUTS.



PIPE STRAPS.



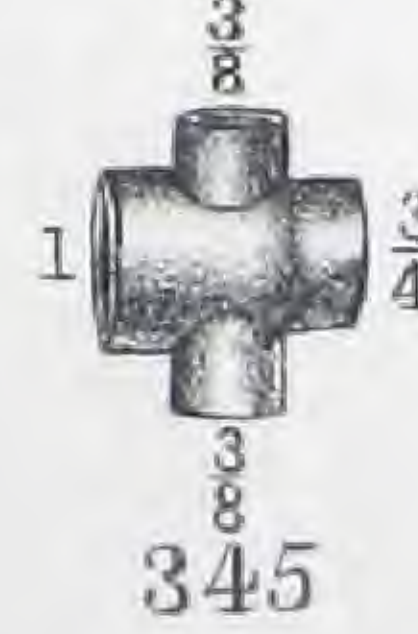
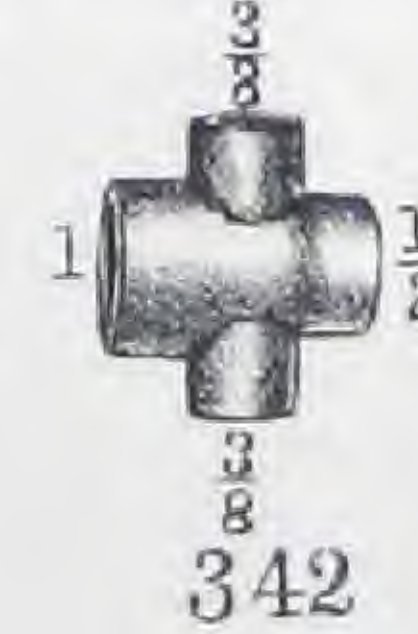
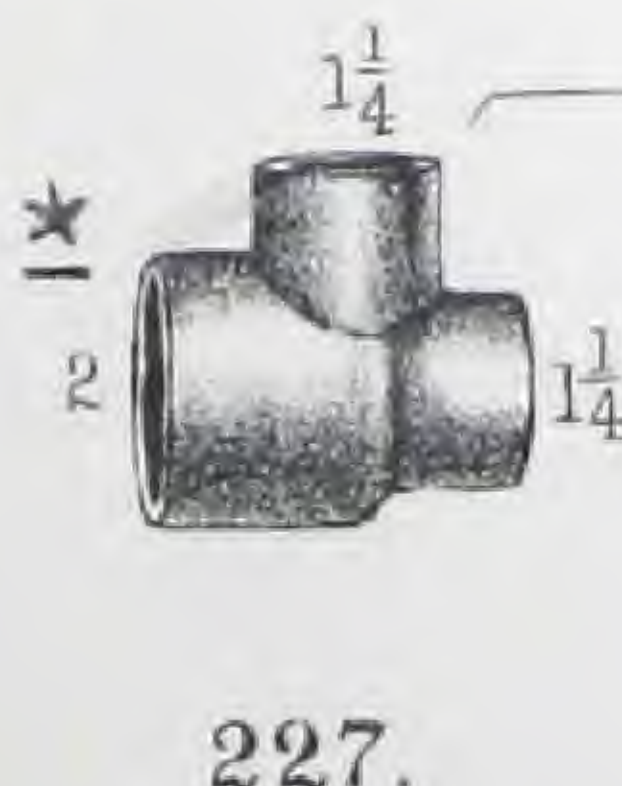
PIPE HOOKS.



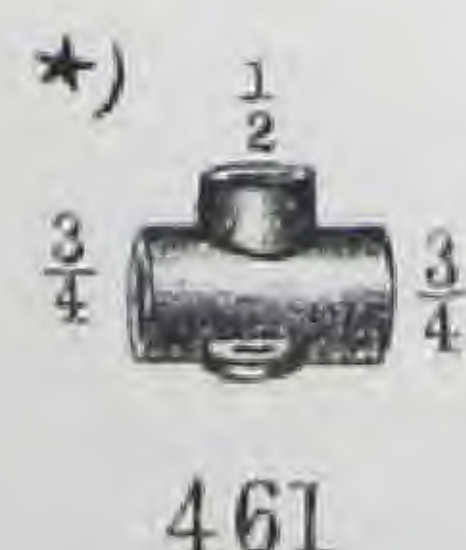
Omitted on Plate 12.



Omitted on Plate 13.



Omitted on Plate 14.





Persons in ordering will please state the "Edition" they order from.

CLASS SECOND.

Every order for special articles must have accurate plans and dimensions attached; and no order, "same as before," will be received. Any article for which no price is quoted on the list will be made only to special order, although such article may be shown in the illustrations.

VALVES AND COCKS.

TABLE OF STANDARD DIMENSIONS OF STEAM VALVES AND COCKS.

The lists of Prices refer to Valves and Cocks only of these dimensions. Any change in diameter of flanges, or in length from face to face, or end to end, must be made by special order; and it is to be noted, that the cost of such changes is often quite disproportionate to the price of the standard articles.

DIAMETERS OF OPENINGS IN VALVES OR COCKS, . . .	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	5	6	8	10	12
Diameter of Flanges. Inches,	6	7	$7\frac{1}{2}$	8	9	10	11	$13\frac{1}{2}$	16	19
Diameter of centre of Bolts. Inches,	$4\frac{3}{4}$	$5\frac{1}{2}$	6	$6\frac{1}{2}$	$7\frac{1}{4}$	$8\frac{3}{8}$	$9\frac{3}{8}$	$11\frac{3}{4}$	14	$16\frac{3}{4}$
Number of Bolts in Flange,	4	4	4	5	5	6	6	8	10	10
Diameter of Bolts. Inches,	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{9}{16}$	$*\frac{9}{16}$	$*\frac{5}{8}$	$\frac{5}{8}$	$\frac{5}{8}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{3}{4}$
Rock Patent Ring Valves, screw ends (brass), Nos. 27, 32. Face to face,	$2\frac{3}{16}$	$2\frac{5}{8}$	$3\frac{1}{8}$	$3\frac{1}{16}$	$4\frac{3}{8}$	$5\frac{5}{16}$	$6\frac{5}{8}$	$7\frac{1}{16}$	.	.	.	.	.	.	.
Rock Patent Ring Valves, screw ends (iron body), Nos. 12, 33. Face to face,	$3\frac{5}{8}$	4	$4\frac{1}{2}$	$5\frac{1}{2}$	7	8	.	.	.	.	.	.	.
Face to face of Flanges of Iron Body Valves, Nos. 1, 3,	5.75	7.25	9.25	10.25	11.25	13.25	15.25	19.00	23.00	27.00
Face to face of Flanges of Iron Body Cocks, No. 40,	8.40	9.50	10.60	13.85	.	.	.	.
End to end of IRON BODY VALVES, No. 1,	9.25	10.25	11.25	13.25	15.25	.	.	.
Distance end to end of Tubes, when made up in Iron Body Valves, No. 1,	7.00	8.07	8.77	10.55	12.35	.	.	.
End to end of IRON BODY VALVES, No. 3,	4.15	4.50	5.10	5.90	7.30	9.25	10.25	.	.	.	.	.	.
Distance end to end of Tubes, when made up in Iron Body Valves, No. 3,	2.87	3.17	3.54	4.48	5.14	7.00	8.07	.	.	.	.	.	.
End to end of BRASS VALVES, No. 20,	1.45	1.78	2.20	2.65	3.30	3.85	4.35	5.30	6.75	7.75	.	.	.	.	.	.	.
Distance end to end of Tubes, when made up in Brass Valves, No. 20,	0.87	1.18	1.42	1.85	2.28	2.78	3.25	4.10	4.97	5.85	.	.	.	.	.	.	.
End to end of IRON BODY COCKS, No. 40,	1.85	2.50	2.90	3.45	4.10	4.55	5.45	7.10	8.40	9.50	10.60	13.85	.	.	.	.
Distance end to end of Tubes, when made up in Iron Body Cocks, No. 42,	1.08	1.50	1.99	2.17	2.77	3.19	4.03	4.94	6.12	7.12	8.12	11.15	.	.	.	.
End to end of BRASS COCKS, No. 41,	1.53	1.85	2.50	2.90	3.45	4.10	4.55	5.45	7.10	8.40	9.50	10.60	.	.	.	.	.
Distance end to end of Tubes, when made up in Brass Cocks, No. 41,	0.95	1.25	1.72	2.10	2.43	3.03	3.45	4.29	5.22	6.50	7.50	8.50	.	.	.	.	.
End to end of IRON ROUND-WAY COCKS, Nos. 92, 93,	3.50	4.10	4.85	5.36	6.60	8.20	11.62	.	.	.	.	.	.	.
Distance end to end of Tubes, when made up in Iron Round-way Cocks, Nos. 92, 93,	2.49	2.82	3.52	4.00	5.18	6.04	9.34	.	.	.	.	.	.	.
End to end of BRASS ROUNDWAY COCKS, Nos. 92, 93,	3.10	3.66	4.35	4.97	6.35	7.70	11.10	.	.	.	.	.	.	.
Distance end to end of Tubes, when made up in Brass Round-way Cocks, Nos. 92, 93,	2.30	2.54	3.28	3.87	5.19	5.92	9.20	.	.	.	.	.	.	.
Face to face of EXPANSION JOINTS, No. 10, when cold or drawn out.
6 inch traverse,	21.25	.	21.65	22.05	22.45	23.25	24.05	.
10 inch traverse,	25.25	.	25.65	26.05	26.45	27.25	28.05	.
End to end of EXPANSION JOINTS, No. 10, Traverse,	6.90	7.67	8.54	9.67	10.46	12.08	13.75	.	.	.	.	.	.	.	.
	.	.	1.80	2.05	2.28	2.45	2.65	3.03	3.43	.	.	.	.	.	.	.	.

The dimensions of Angle, Cross, or Safety Valves, from centre to face of flange or end, can be got by taking one-half the length face to face, or end to end of ordinary valves of corresponding sizes, from the above table.

* The $3\frac{1}{2}$ inch flanges can have 4 $\frac{5}{8}$ bolts, and the 4 inch flanges can have 4 $\frac{3}{4}$ bolts; but the joint is not likely to be so good as when the tabular numbers and dimensions are used.

CLASS SECOND.—Continued.

VALVES AND COCKS.

No.	PLATE.	DIAMETERS OF OPENINGS, . .	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	2	2 $\frac{1}{2}$	3	3 $\frac{1}{2}$	4	5	6	8	10	12
			\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
		GLOBE AND ANGLE VALVES.																	
12 } 33 }	2 3	{ Rock Patent Ring Valve, iron body, flange,																	
13	2	{ Rock Patent Ring Valve, iron body, screw,																	
27 } 32 }	3 3	{ Rock Patent Ring Valve, brass, screw,																	
1	1	{ *Iron Body Steam Valves, flange ends,						5.00	6.00	8.25	16.00	19.50	24.00	33.00	43.00	58.00	94.00	133.00	264.00
3	1	{ Iron Body Steam Valves, screw ends,					3.38	4.25	5.00	7.25	14.00	18.00	23.60	31.00	41.00				
20	3	{ Brass Steam Valves, screw ends,	.90	1.00	1.35	1.85	2.50	3.50	4.75	7.35	12.50	20.00	33.00	50.00					
20	3	All Iron Steam Valves, screw ends,			5.20	5.90	6.65	7.45	9.30	11.15	13.30								
		CROSS VALVES.																	
4	1	{ Iron Body Steam Valves, flange ends,						5.50	6.90	9.50	18.50	22.50	29.00	37.00	48.00	63.00			
4	1	{ Iron Body Steam Valves, screw ends,					3.78	4.75	5.75	8.50	17.50	21.00	26.00	35.00	46.00	61.00			
22	3	Brass Steam Valves, screw ends,	1.20	1.45	1.80	2.70	3.85	5.30	6.80	10.35	24.00	35.00							
		CHECK VALVES, HORIZONTAL, VERTICAL OR ANGLE.																	
5	1	{ Iron Body Check Valves, flange ends,								7.00	14.50	17.50	21.00	29.00	38.00	51.00			
		{ Iron Body Check Valves, screw ends,					3.25	3.75	4.25	6.25	12.60	16.00	19.50	27.00	36.00				
28, 29, 30,	3	Brass Check Valves, screw ends,	1.00	1.10	1.35	2.00	2.85	3.90	5.00	7.65	15.00	24.00							
		BACK PRESSURE VALVES.																	
6	1	{ Iron Body Back Pressure Valves, flange ends,								17.50	21.50	26.00	34.00	36.50	49.00	64.50	116.00		
6	1	{ Iron Body Back Pressure Valves, screw ends,								16.00	19.00	26.00		38.00					
		† SAFETY VALVES, GLOBE, ANGLE OR HORIZONTAL.																	
2	1	{ Iron Body Safety Valves, flange ends,								12.50	22.50	28.00	35.00	43.00	57.50	72.50	152.00		
25	3	{ Iron Body Safety Valves, screw ends,						6.25	7.75	11.50	19.60	26.50	33.50	41.00					
25	3	Brass Safety Valves, screw ends																	
26	3	{ Do. do. angle, do.			3.00	4.25	5.75	8.00	10.50	16.00	27.00								
		THROTTLE VALVES.																	
101	6	{ Iron Body Throttle Valves, to go in flange joints,							4.00	6.50	8.00	12.00	17.90	20.30	25.00	32.00			
101	6	{ Iron Body Throttle Valves, with flanges for tubes and bolts,								12.80	14.15	15.85	17.90	20.30	25.00	32.00			
106	6	Brass Throttle Valves, screw ends,			2.65	3.45	4.85	6.50	8.65	14.25	22.20	33.35							
		STEAM AND WATER COCKS, BEST STEAM METAL.																	
40	4	Iron Cocks, all iron, flange ends,								5.40	8.60	13.25	19.50	28.25	52.50				
42	4	{ Iron Cocks, all iron, screw ends,		.85	.95	1.10	1.45	1.85	2.35	3.90	6.90	9.50	13.50	18.00	46.50				
40	4	Iron Cocks, brass plugs, flange ends,								8.30	13.85	22.25	34.00	39.75	95.00				
42	4	Iron Cocks, brass plugs, screw ends,		1.20	1.30	1.70	2.20	2.90	3.85	6.80	11.75	19.50	30.50	40.00	89.00				
41	4	Brass Cocks, screw ends,	.65	.75	1.25	1.60	2.50	3.80	5.25	7.50	16.00	28.00							
45	4	{ Brass Cocks, with union (screw or solder) one end and screw the other,	1.55	1.80	2.15	3.00	4.20	5.80	8.00	13.60	23.25								
Not drawn.		Iron Cocks, all iron, Round- way, flange ends,								8.80	13.70	20.50	29.50	41.25					
92 & 93	6	Iron Cocks, all iron, Round- way, screw ends,				1.80	2.50	3.35	4.40	7.30	11.60	17.75	26.00	37.00					
Not drawn.		Iron Cocks, brass plugs, Round-way, flange ends,								15.00	23.10	34.50	50.00	71.25					
92 & 93	6	Iron Cocks, brass plugs, Round-way, screw ends,				2.50	3.90	5.50	7.40	13.50	21.00	31.75	46.50	67.00					
92 & 93	6	Brass Cocks, Roundway, screw or pitcher nose,				3.20	5.00	7.20	9.90	17.20	27.70	42.20							
Not drawn.		Three-way Cocks, all iron, flange ends,								7.45	11.85	18.15	27.00	38.40					
50	4	Three-way Cocks, all iron, screw ends,					1.95	2.50	3.15	5.20	8.70	14.00	21.75	32.00					
Not drawn.		Three-way Cocks, iron, brass plugs, flange ends,								10.35	17.10	27.15	41.50	59.90					
50	4	Three-way Cocks, iron, brass plugs, screw ends,					2.70	3.55	4.65	8.10	13.95	23.00	36.25	53.50					
50	4	Brass Three-way Cocks, screw ends,			2.15	2.95	4.15	5.90	8.25	14.50	26.00	43.00							

* Iron Body Steam Valves have all surfaces of contact brass, loose disks, and spherical seats. Valves 1 inch to 2 $\frac{1}{2}$ inches, have inside valve screws; above 2 $\frac{1}{2}$ inches, Valves have outside valve screws. Brass Steam Valves, of all sizes, have inside valve screws.

† What is known as a Globe Safety Valve is shown, (figs. 2, plate 1, and figs. 25, plate 3.) Horizontal Safety Valves made to order, same prices as other Safety Valves; these correspond in form to what is known as a Globe Valve. Our Standard Safety Valve has a lever or arm, with Ball, for 80 pounds maximum pressure. Safety Valves for other pressures, not over 120 pounds, made as ordered, with an extra charge of per cent.

CLASS SECOND.—*Continued.*

VALVES, COCKS, &c.

DIAMETER OF OPENINGS. INCHES,		$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	2	2 $\frac{1}{2}$	3	3 $\frac{1}{2}$	4	5	6	8	10
No. PLATE.		\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
10	2	Expansion Joints.	{ Iron body with brass sleeves, flange, 6 inch traverse, }	.	.	.	.	.	.	.	26.40	.	35.50	46.75	60.50	96.25	140.00
		"	{ Iron body with brass sleeves, flange, 10 inch traverse, }	.	.	.	.	.	.	.	31.20	.	42.00	55.25	71.50	113.25	160.00
11	2		{ Iron body with brass sleeves, screw, traverse from table, }	.	.	.	.	3.50	4.80	8.00	12.00	16.80	.	.	.	.	.
70	5	"	{ Brass Expansion Joints, screw, traverse from table, }	.	.	2.40	3.20	4.40	6.40	9.60	.	.	.	.	.	.	.
108	6	Swing Joints.	Brass Steam Swing Joints, screw, .	.	.	2.00	2.60	3.60	5.00	6.80	11.80	.	.	.	.	.	.
75	5	Union Joints.	{ Brass Unions, both ends screw, }	.	.	.	.	.	.	.	.	.	.	.	.	.	.
74	5	"	{ Brass Unions, one end screw and one end solder, }	.55	.65	.80	1.15	1.60	2.10	2.70	4.00	5.75	.	.	.	.	.
99	6	Foot & Check Valves.	{ Iron Vertical Foot Valves, leather seat, flange, }	.	.	.	.	.	7.20	9.60	12.15	14.90	17.75	24.00	30.50	.	.
107	6	"	{ Iron Vertical Foot Valves, leather seat screw, }	.	.	.	.	3.20	4.00	5.70	7.50	9.40	11.40	13.50	18.00	23.00	.
102	6	"	{ Strainers, (flange, if ordered, extra,) }	.	.	.	.85	1.10	1.45	1.90	2.60	3.80	5.40	.	.	.	.
105	6	"	{ Iron Horizontal Hinge Valves, leather or brass valve, on iron seat, screw, }	.	.	.	.	.	7.70	10.00	13.00	.	.	.	.	.	.

GAUGE COCKS, OIL CUPS, STEAM WHISTLES.

All brass finished work.

51	4*	Gauge Valves.	{ Self-packing stem, wood wheel, }	Length over all,	6 inches, 8 inches, 9 $\frac{1}{2}$ inches.
				Diameter of shank, (tube thread,)	$\frac{1}{2}$ " $\frac{3}{4}$ " 1 "
				Price,	\$3.25 \$5.00 \$7.20
52	4	Gauge Cocks.	{ Loose valve, stem for regrinding valve, with seat; compression lever handle, }	Diameter of shank, (tube thread,)	$\frac{1}{2}$ $\frac{3}{4}$ 1 1 $\frac{1}{4}$ inches.
				Price,	\$2.33 2.33 2.33 2.33
53	4	Gauge Cocks.	{ With hollow plug, steamboat pattern, }	Length over all,	5 inches.
				Diameter of shank, (tube thread,)	$\frac{3}{4}$ or 1 "
				Price,	\$5.50 (finished), \$5.00 (rough).
56	4	Gauge Cocks.	{ Mississippi pattern, }	Diameter of plain shank,	$\frac{3}{8}$ $\frac{1}{2}$ $\frac{3}{4}$ 1 1 $\frac{1}{4}$ 1 $\frac{1}{2}$ inches.
				Price,	\$1.50 1.50 1.66 2.00 3.00 3.75
57	4	Gauge Cocks.	{ Plain Gauge Cock, }	Diameter of shank,	$\frac{3}{8}$ $\frac{1}{2}$ $\frac{3}{4}$ inches.
				Price,	\$0.90 1.00 1.10
55	4	Gauge Cocks.	{ New York pattern, compression, lever handle, }	Length over all,	4 inches.
				Diameter of shank, (tube thread,)	$\frac{1}{2}$ "
				Price,	\$1.50
54	4	Air or Pet Cocks.	{ There are three sizes of body, but the openings through these Cocks are one-eighth inch diameter, }	Diameter of shank, (tube thread size),	$\frac{1}{8}$ $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{3}{4}$ inch.
				Price,	\$0.80 1.00 1.50 1.50 1.50
72	5	Oil Cups.	{ Plain Oil Cups, }	Diameter of bowl, $\frac{7}{8}$ 1 1 $\frac{3}{16}$ 1 $\frac{3}{8}$ 1 $\frac{5}{8}$ 2 2 2 $\frac{1}{4}$ 2 $\frac{3}{4}$ inches.	
				Price,	\$0.90 1.05 1.35 1.50 1.85 2.70 3.70 4.45 6.15
71	5	Oil Cups.	{ Globe Oil Cups, with double Cocks and Air Cock, }	Height over all, 4 $\frac{1}{4}$ 5 6 6 $\frac{1}{2}$ 7 $\frac{1}{2}$ 9 9 $\frac{1}{2}$ 10 inches.	
				Diameter of Globe, 1 $\frac{5}{8}$ 1 $\frac{7}{8}$ 2 $\frac{1}{8}$ 2 $\frac{1}{2}$ 3 3 $\frac{1}{4}$ 4 4 $\frac{1}{4}$ "	
				Number,	00 0 1 2 3 4 5 6
				Price,	\$5.33 6.67 7.33 8.67 10.00 12.67 21.33 26.67
86	5	Steam Whistles.	{ Steam Whistles }	Diameter of Bell, 2 2 $\frac{1}{2}$ 3 3 $\frac{1}{2}$ 4 5 6 inches.	
				Price,	\$16.00 19.33 22.00 24.00 26.67 36.00 48.00

* The shanks of Gauge Valves or Cocks will have tube threads the size given, or will be left plain the proper sizes for tube threads. If other sizes of shanks are wanted, they will be made to order.

CLASS SECOND—Continued.

ARTICLES OF OCCASIONAL DEMAND.

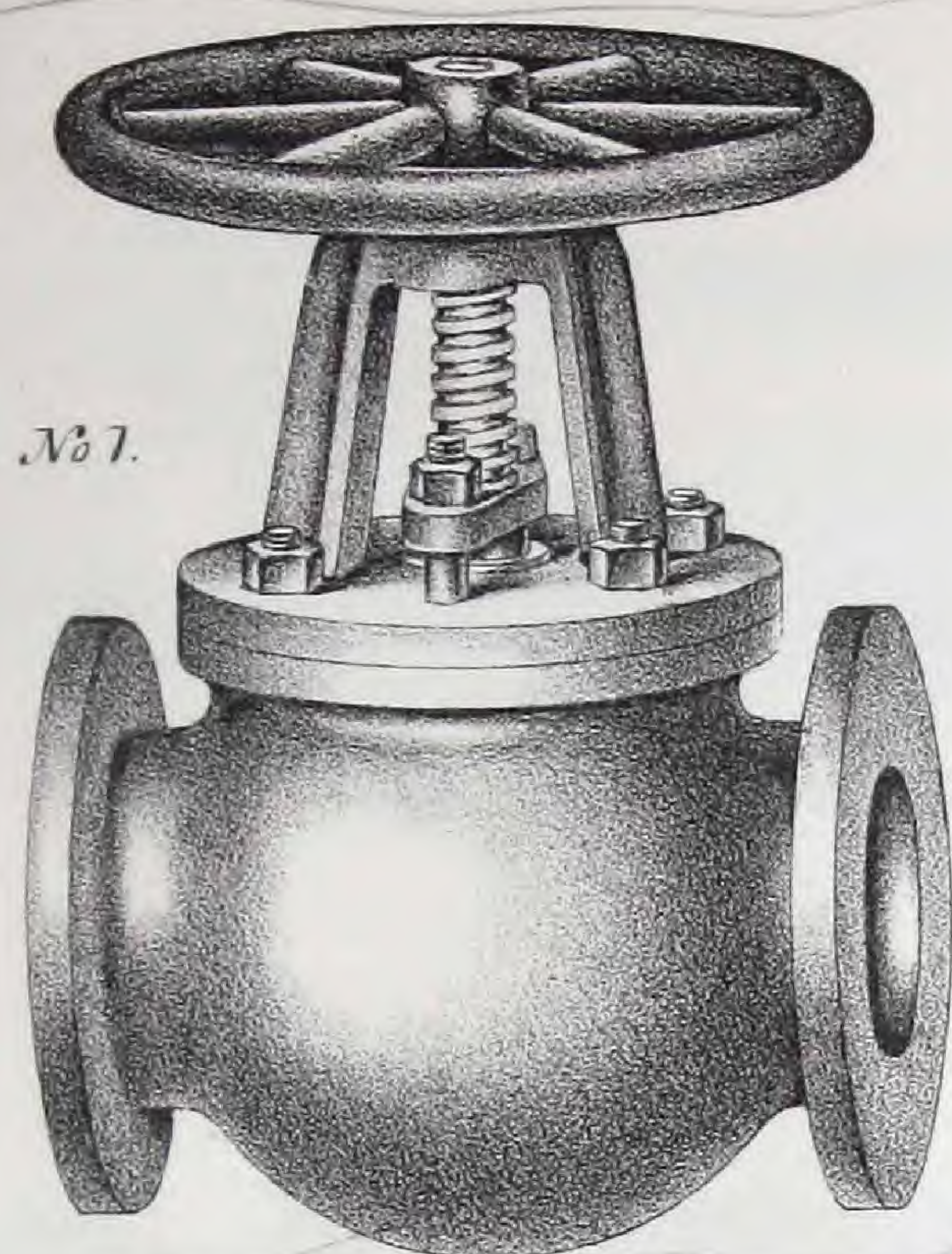
END OF CLASS SECOND.

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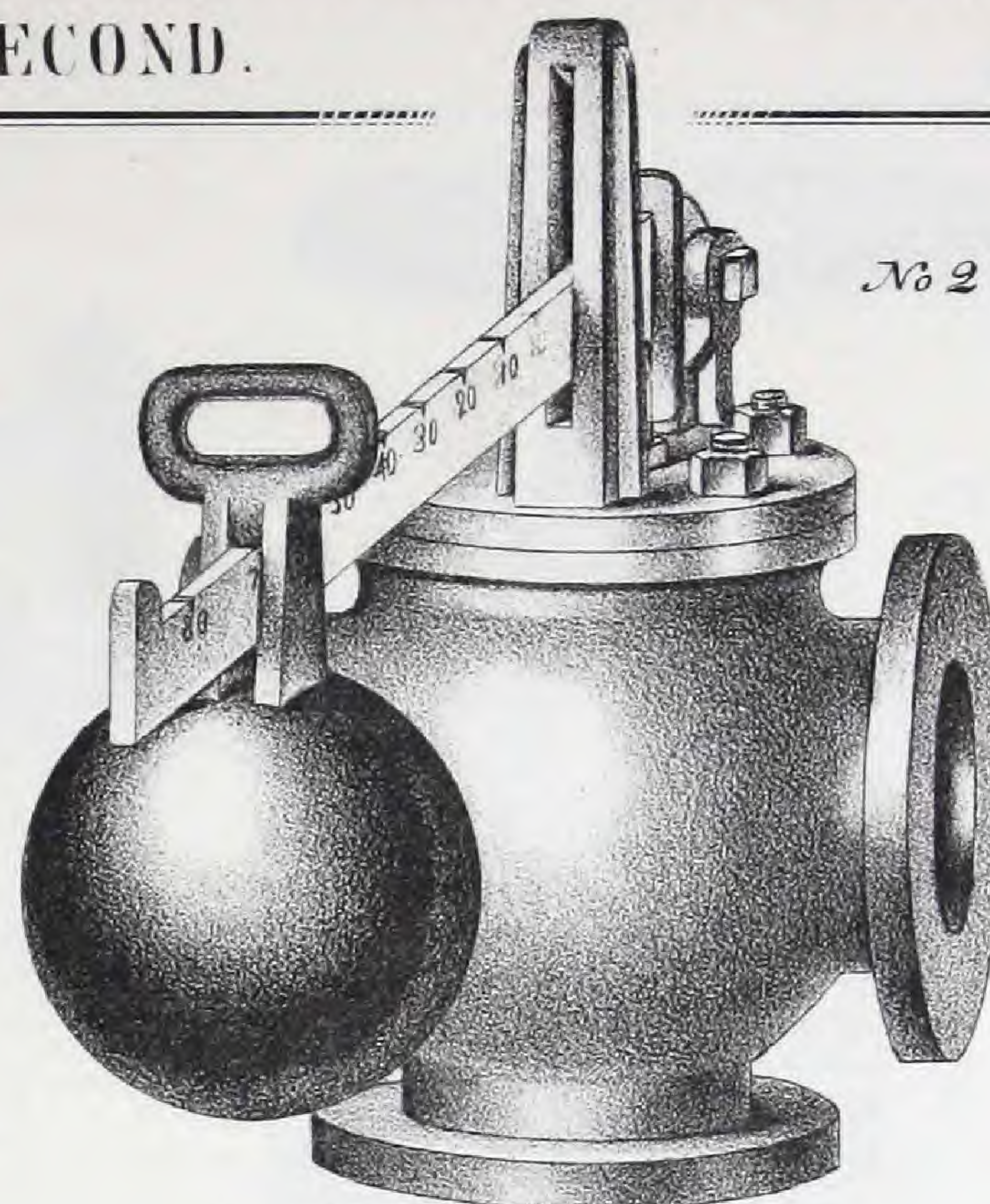
CLASS SECOND.

Plate 1.



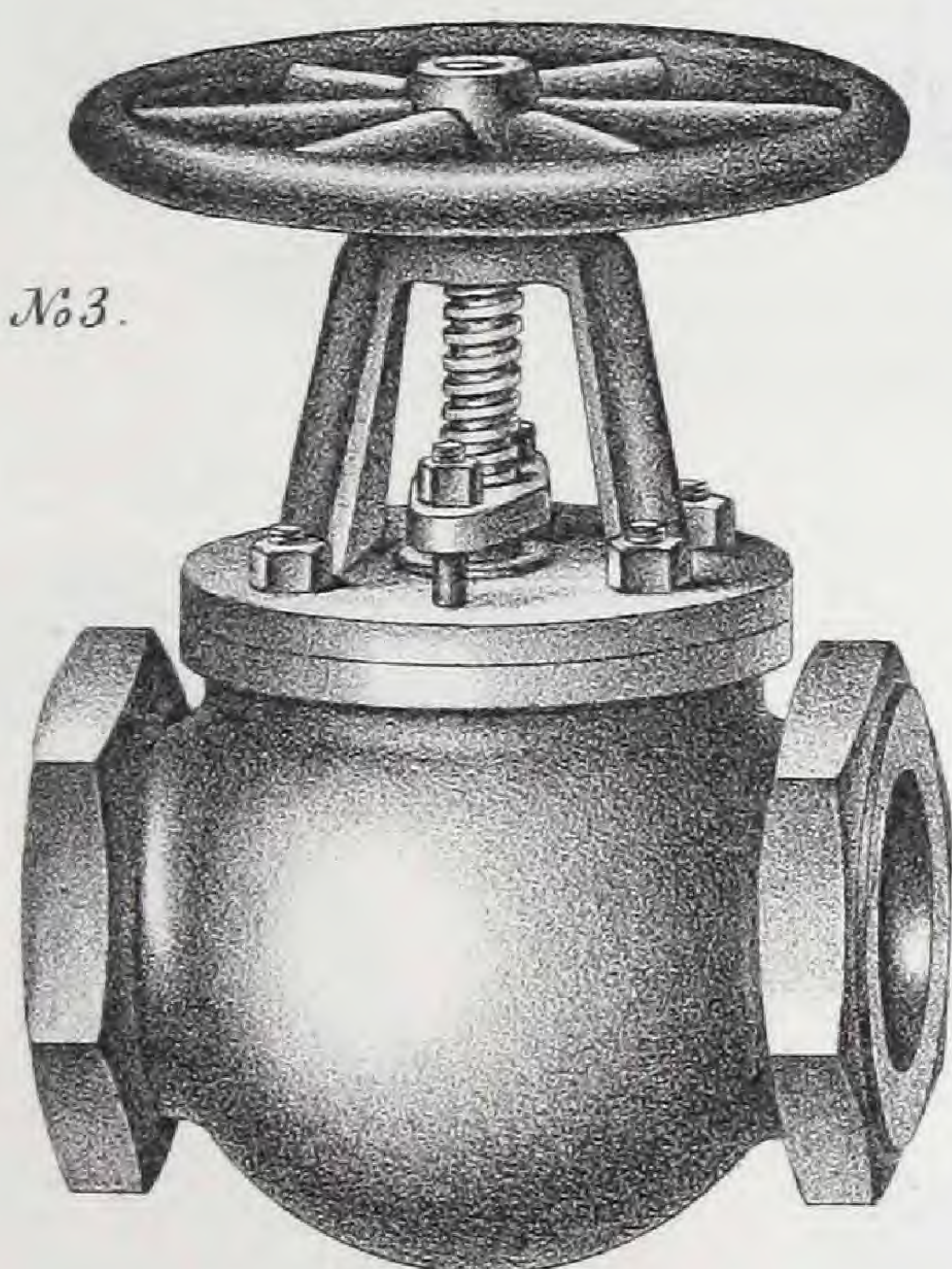
No. 1.

Flanged Globe Valve.



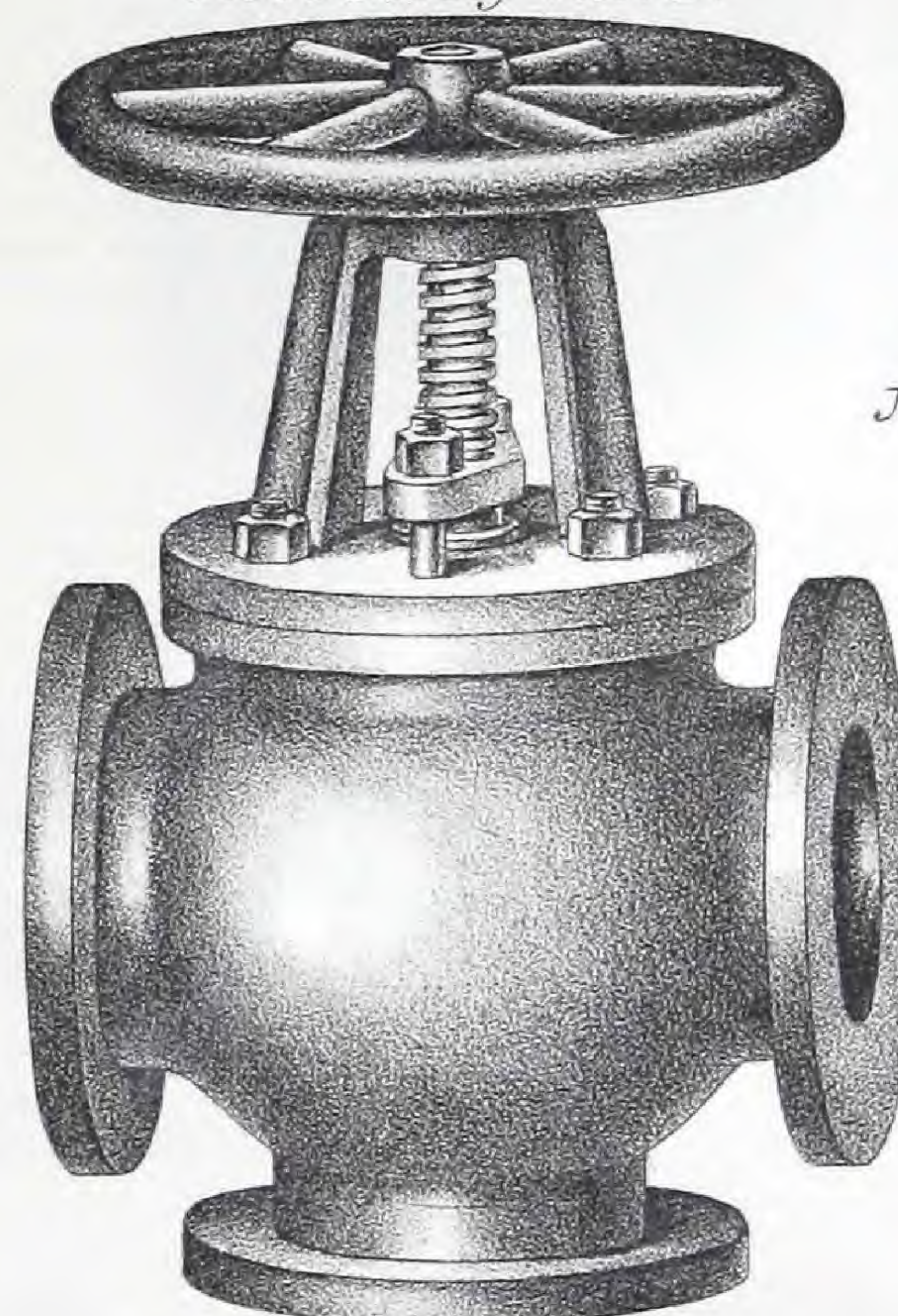
No. 2.

Globe Safety Valve.



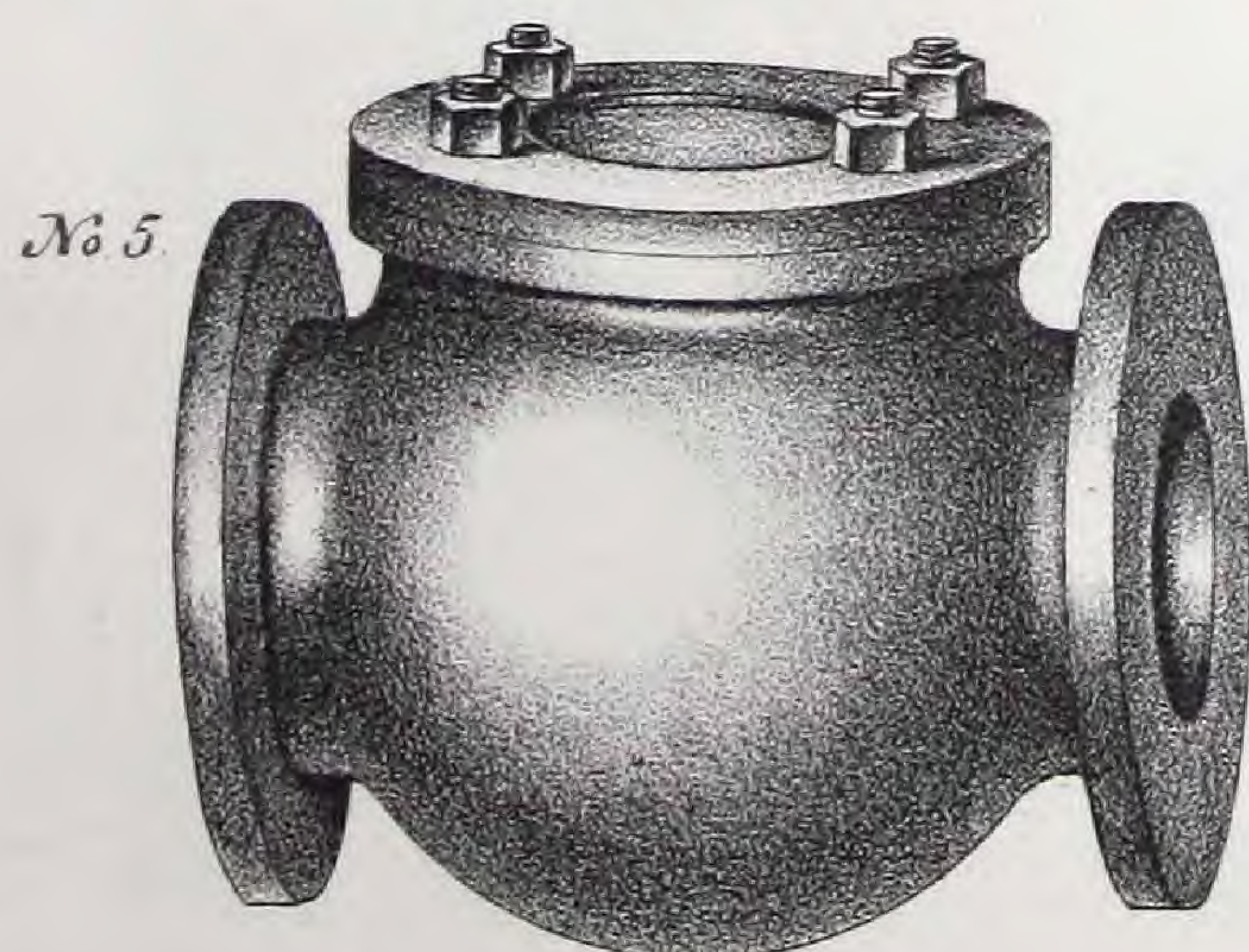
No. 3.

Screwed Globe Valve.



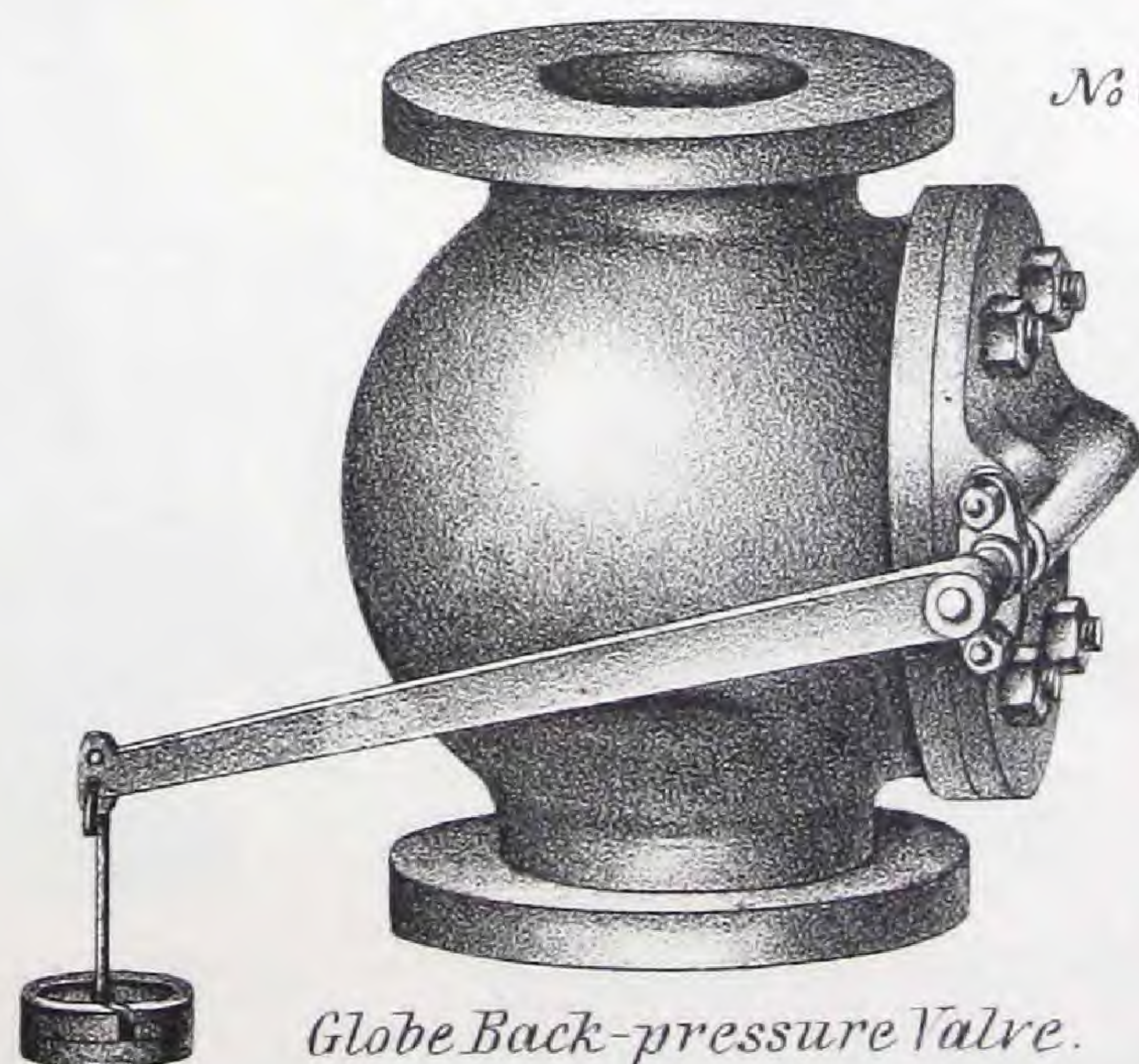
No. 4.

Globe Cross Valve.



No. 5.

*Globe Vertical & Horizontal
Check Valve.*



No. 6.

Globe Back-pressure Valve.

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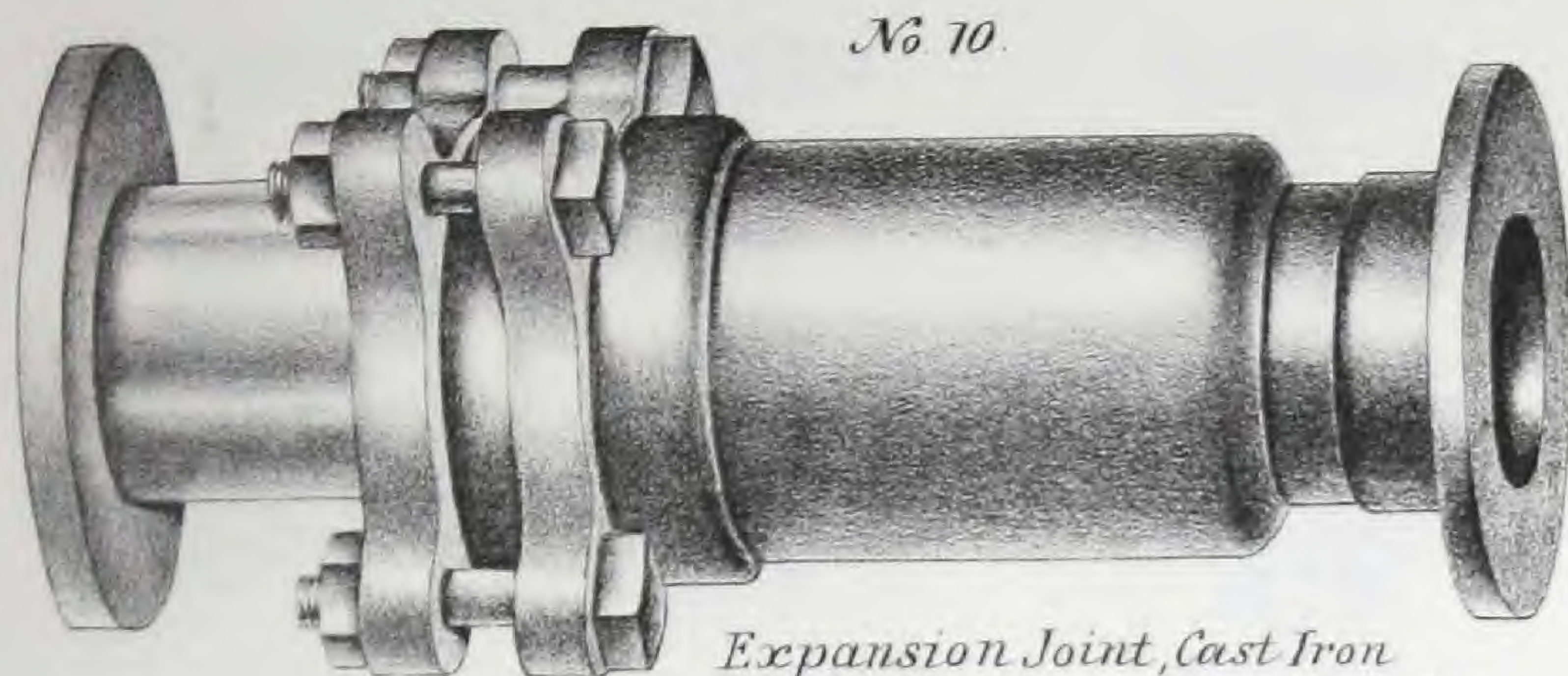
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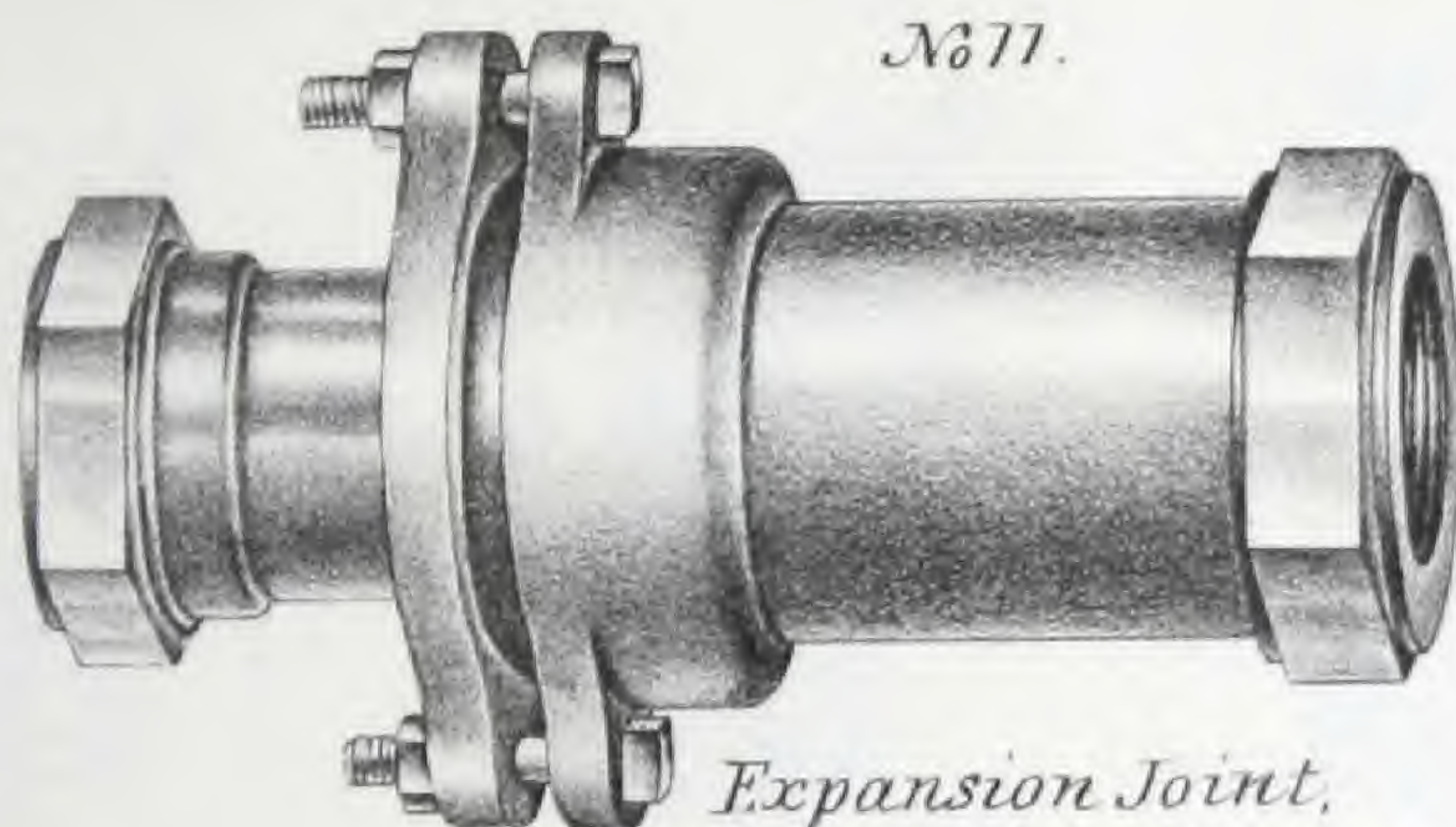
CLASS SECOND.

Plate 2.



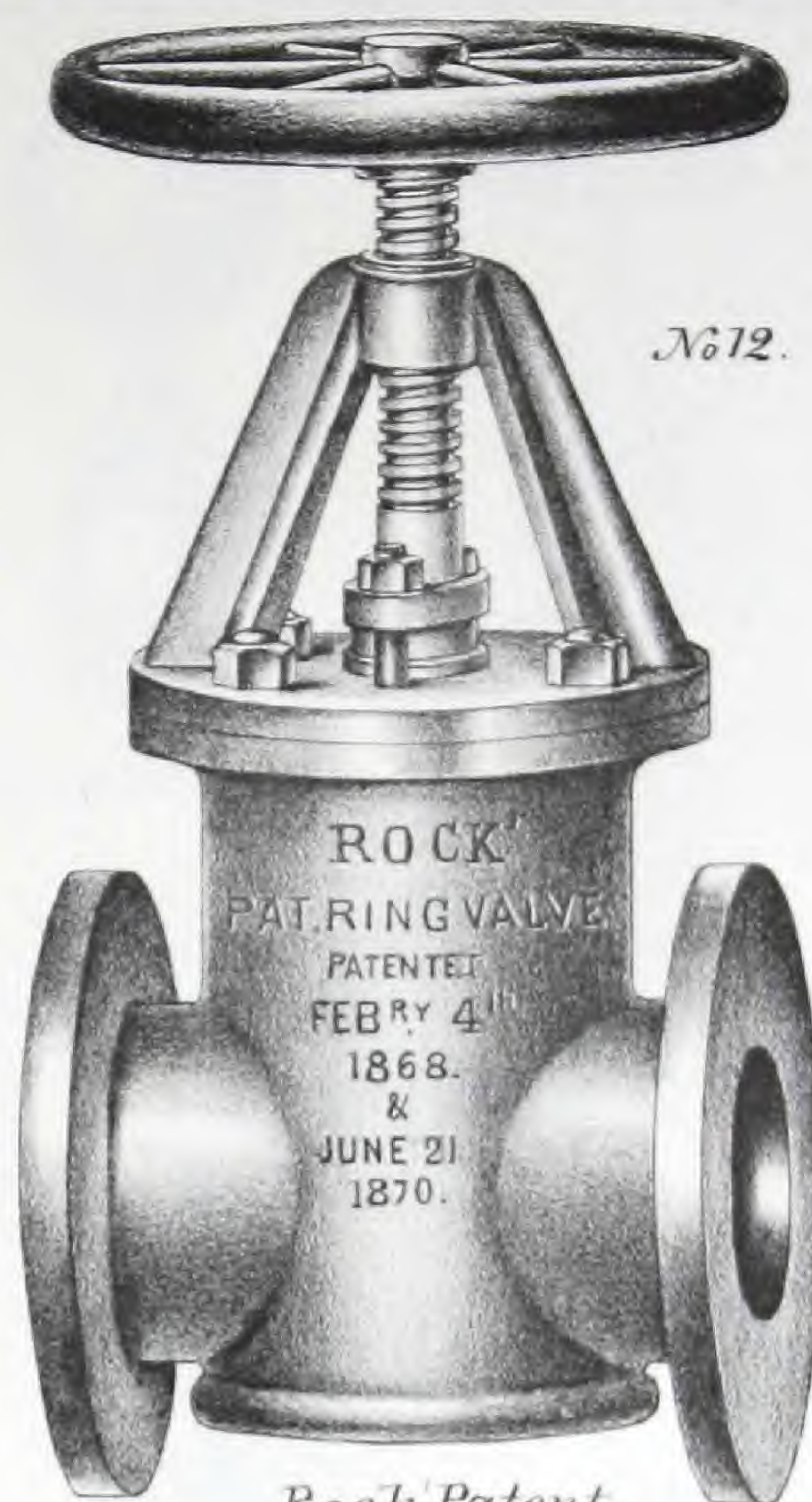
No. 10.

*Expansion Joint, Cast Iron
with Brass Sleeve, Flange Ends.*



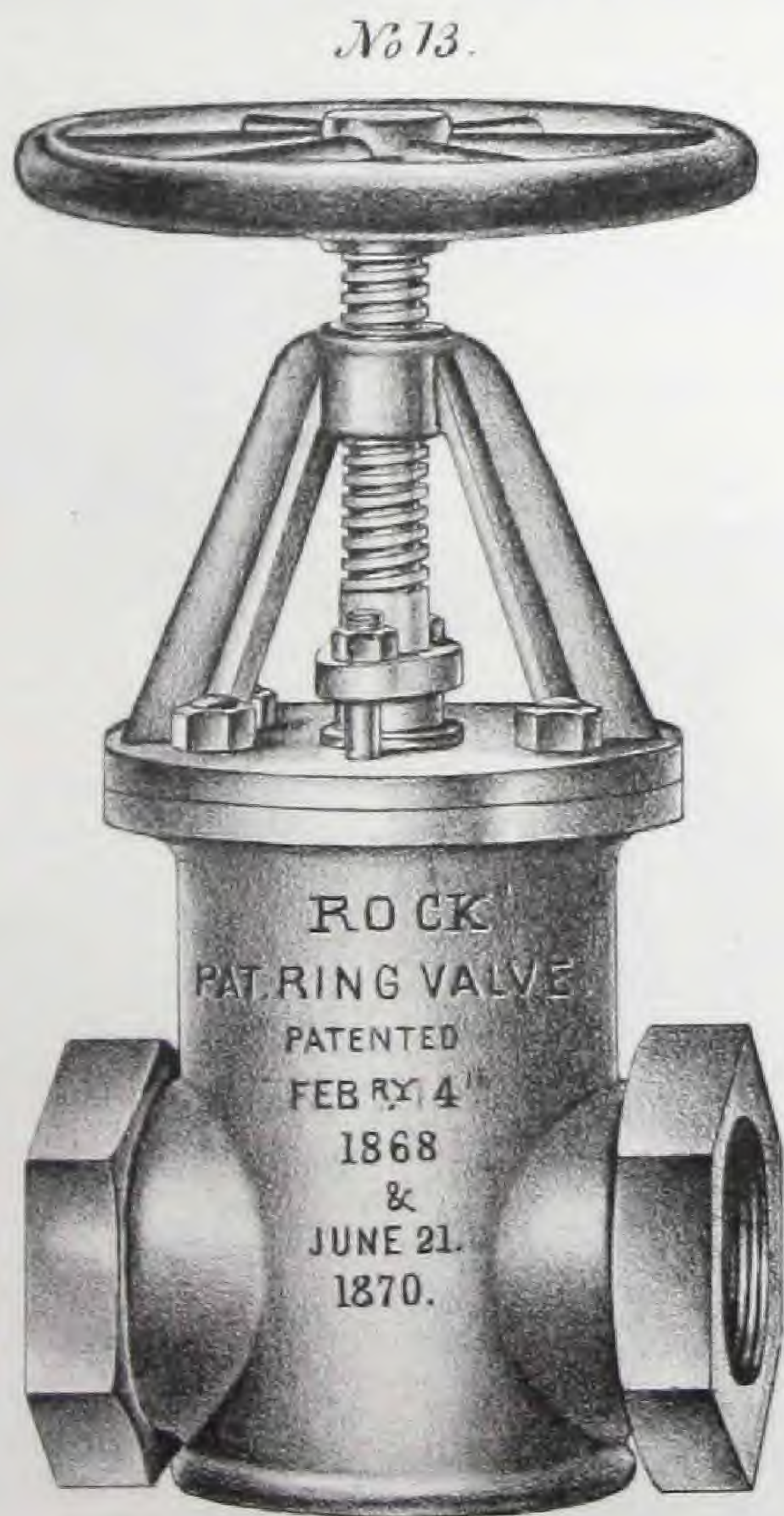
No. 11.

*Expansion Joint,
Cast Iron with Brass Sleeve, Screw Ends.*



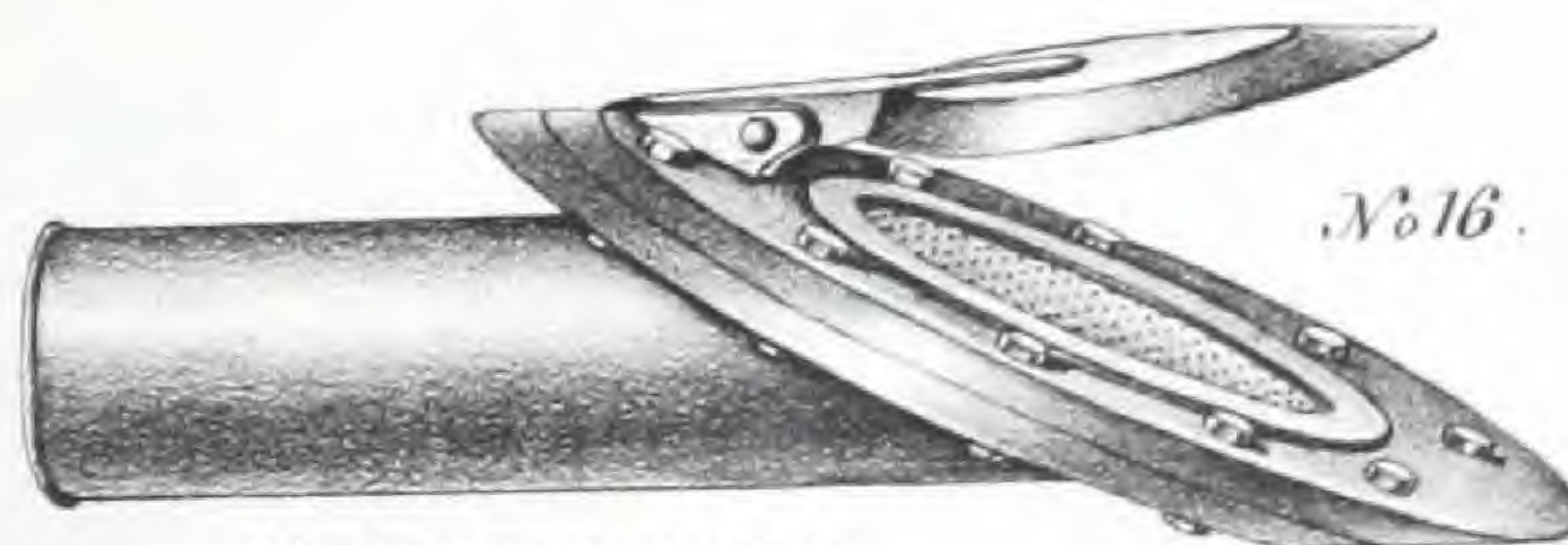
No. 12.

*Rock Patent
Ring Valve. (Iron Body, Flange.)*



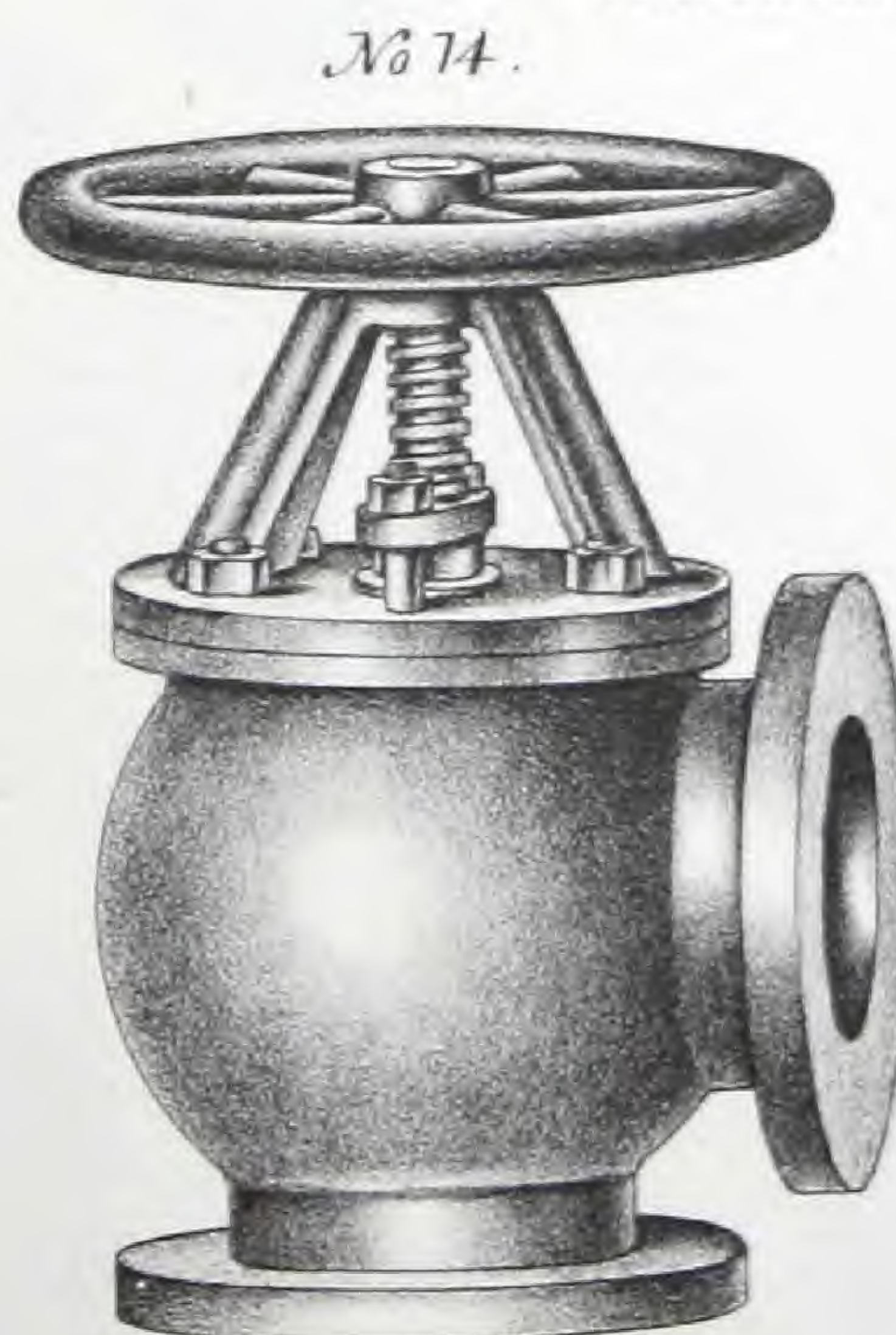
No. 13.

*Rock Patent Ring Valve
(Iron Body, Screw.)*



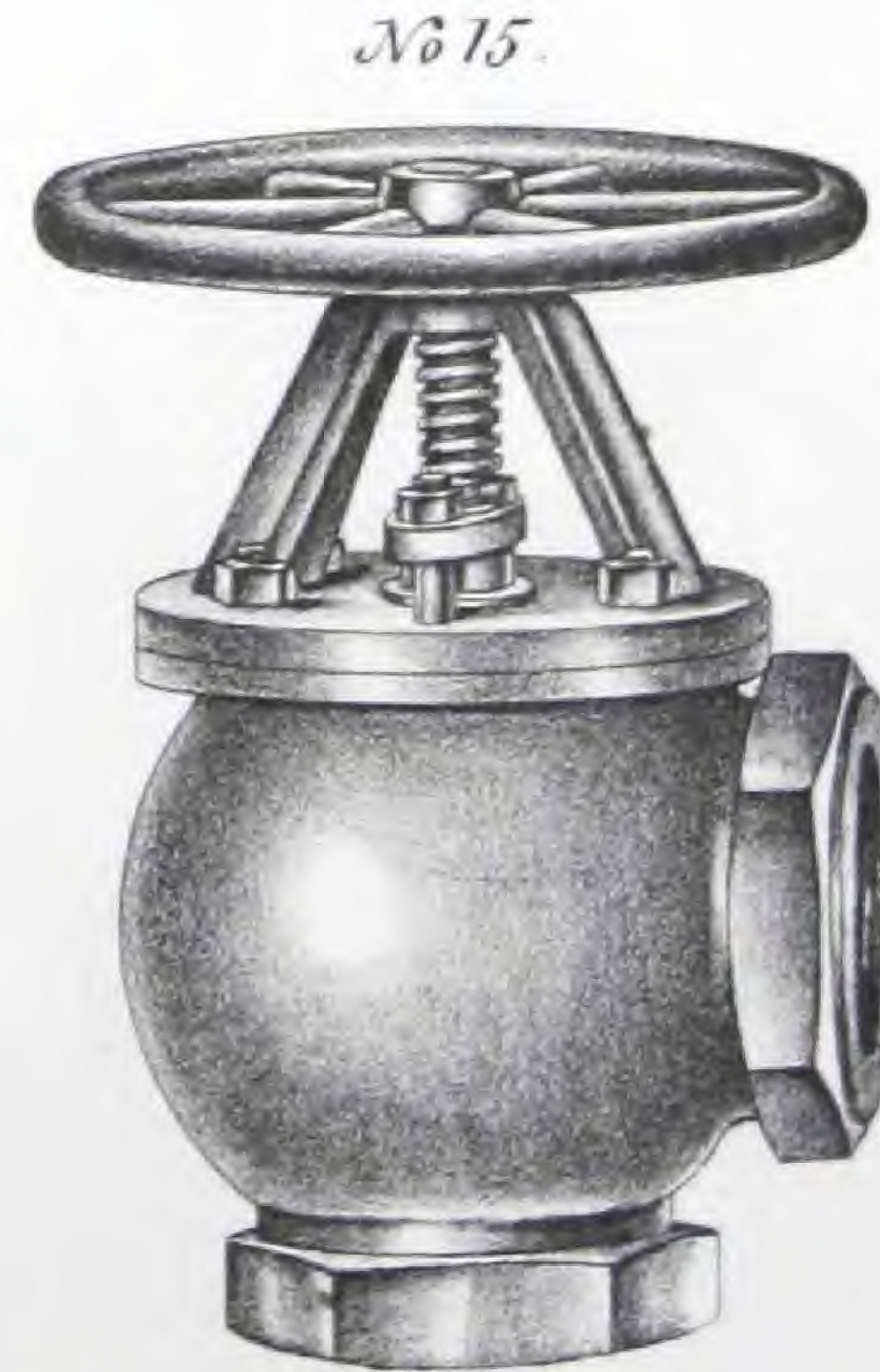
No. 16.

*Water Tank Valve
with Strainer.*



No. 14.

Flanged Globe Angle Valve.



No. 15.

Screwed Globe Angle Valve.

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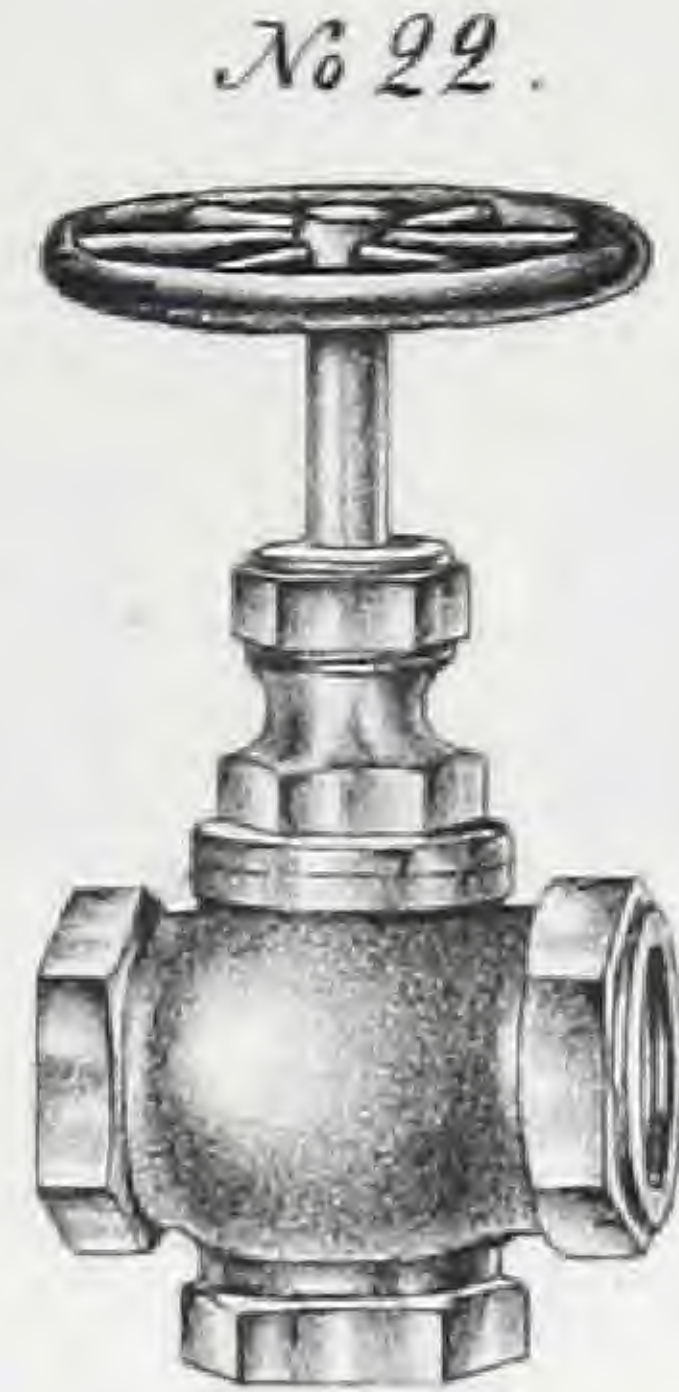
Plate 3.



Globe Valve.



Angle Valve.



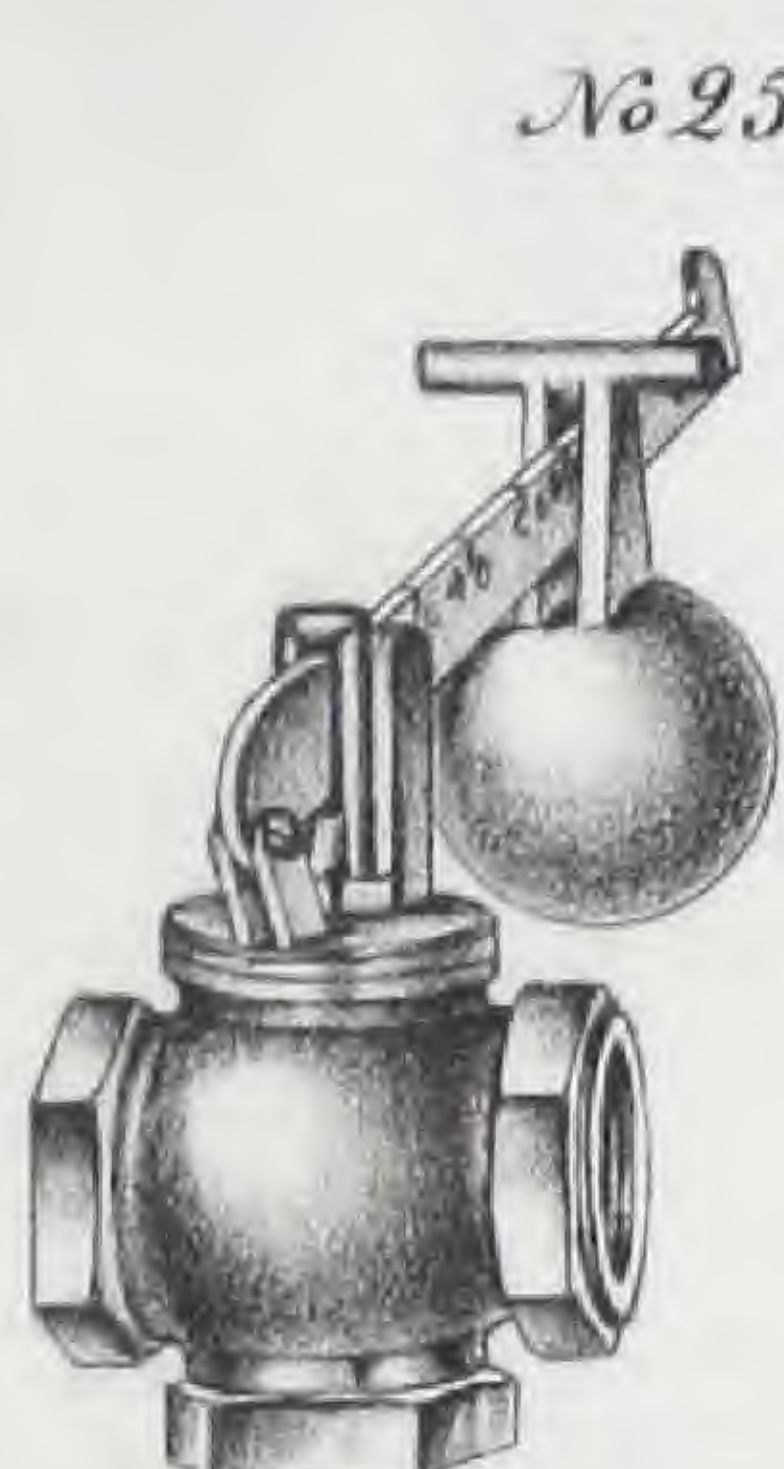
Cross Valve.



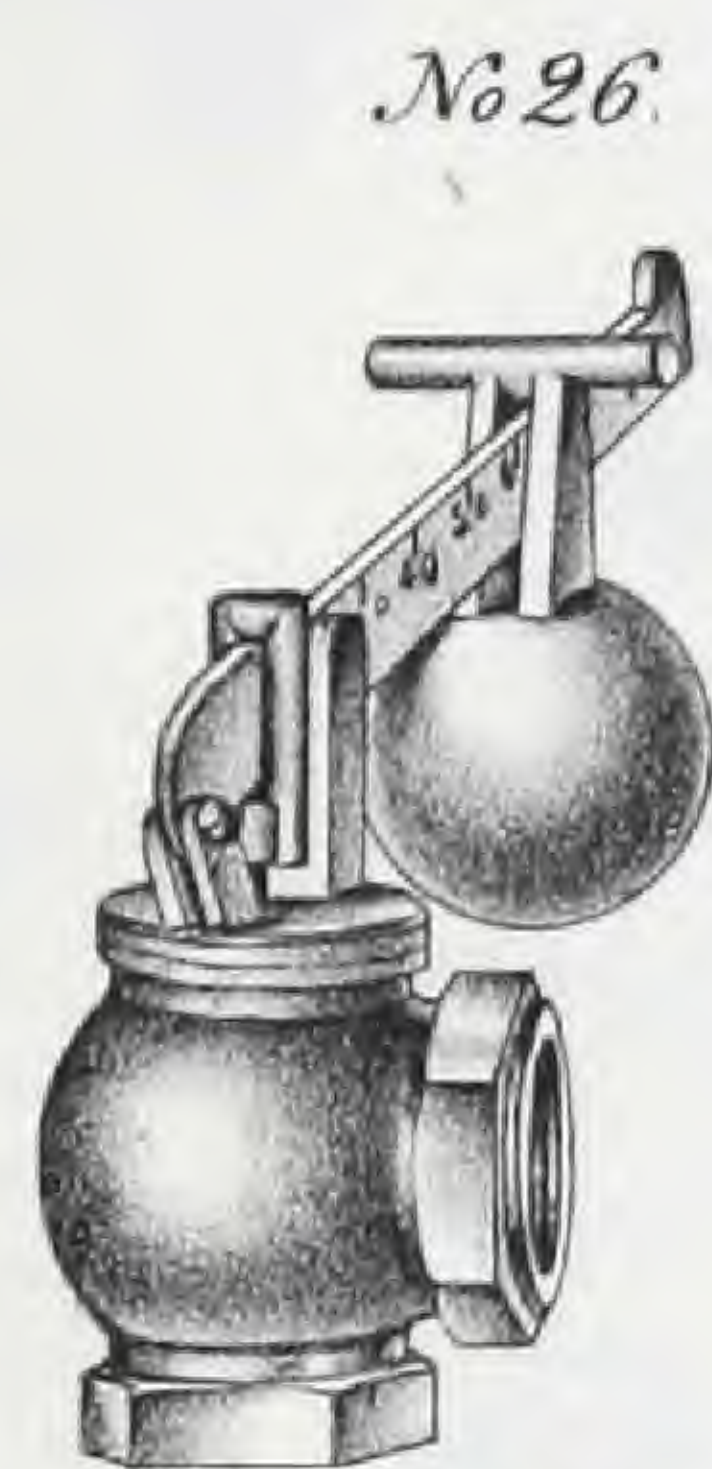
Angle Pressure Valve.



Globe Corner Valve.



Globe Safety Valve.



Angle Safety Valve.



Rock Patent Ring Valve.



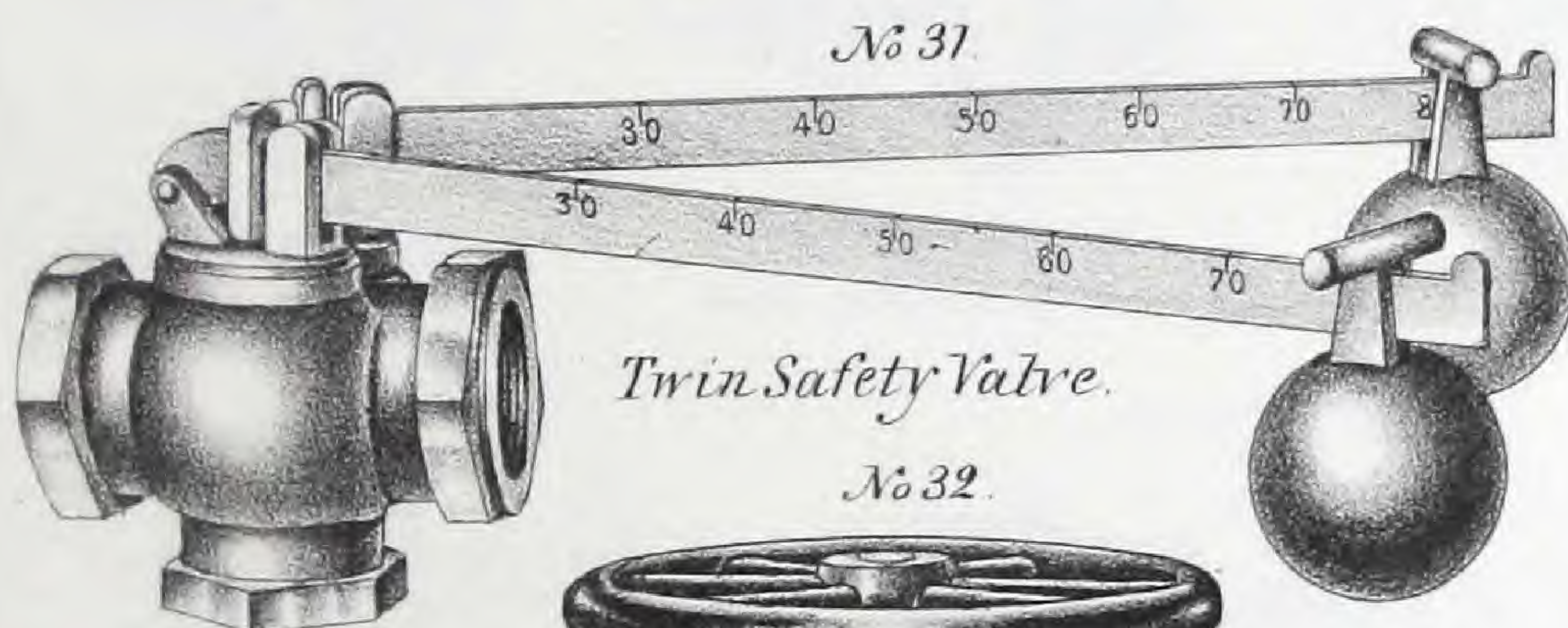
Horizontal Check Valve.



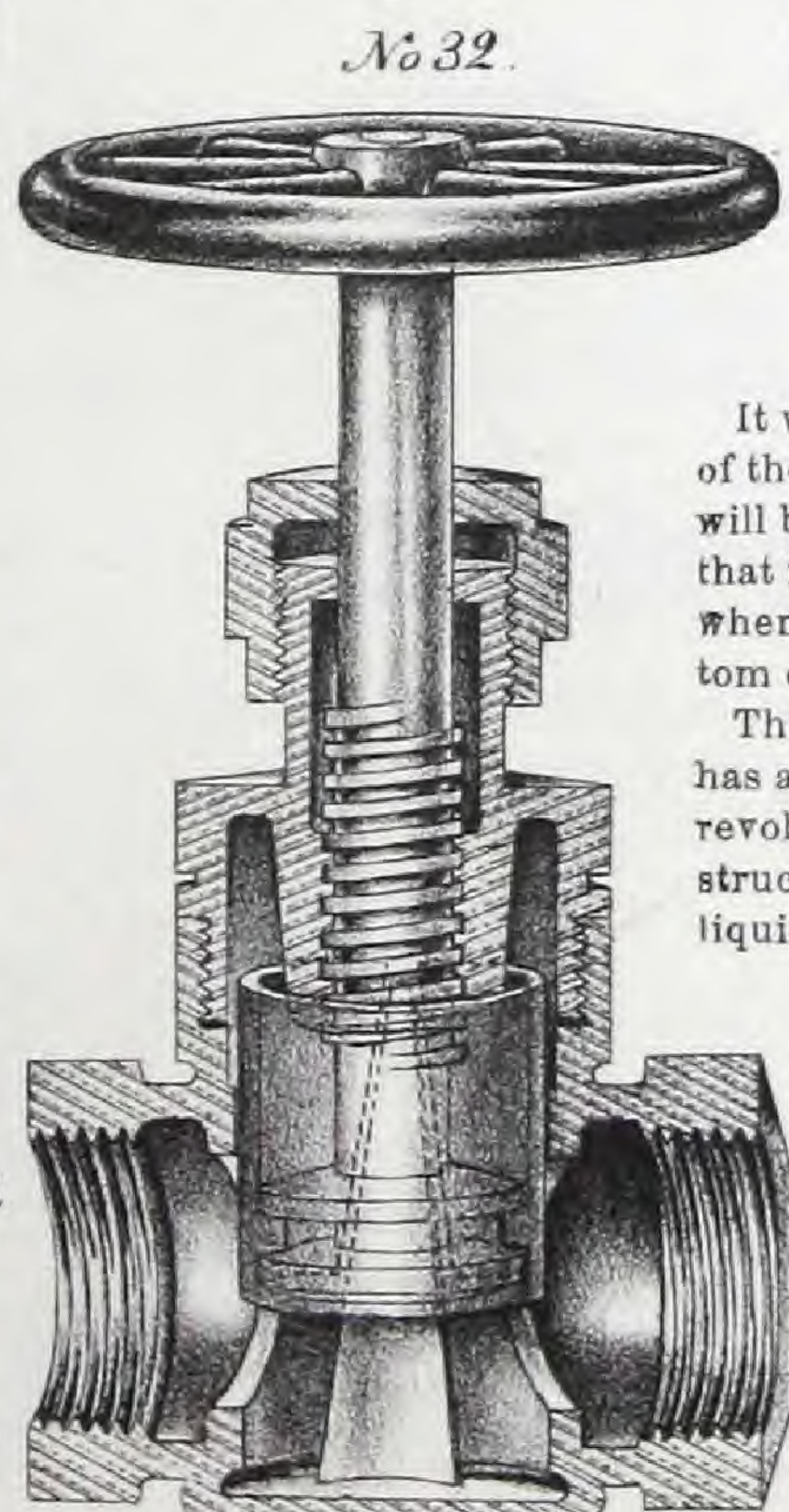
Vertical Check Valve.



Angle Check Valve.



Twin Safety Valve.



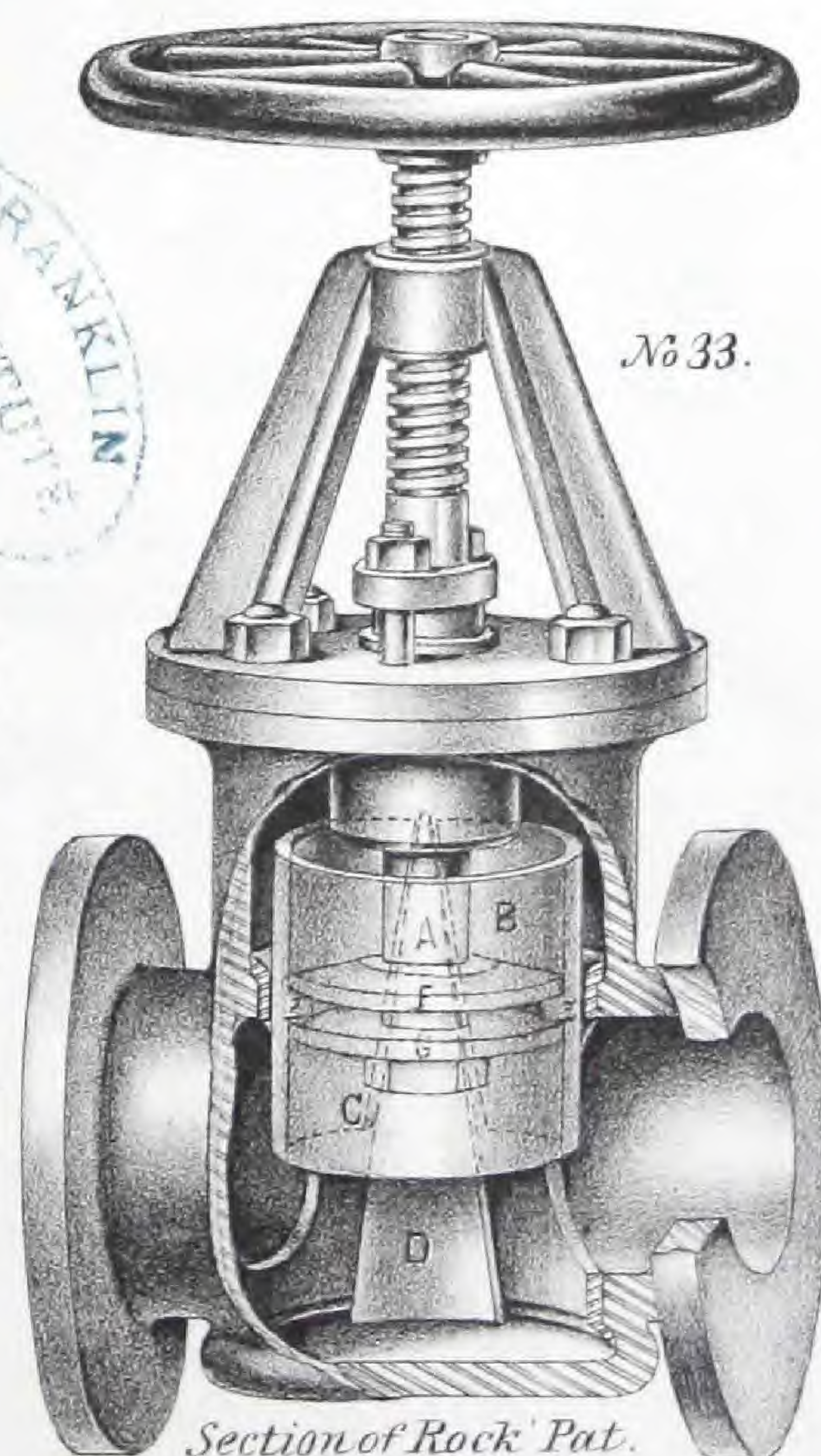
Sect. of Rock Patent Brass Ring Valve.

DESCRIPTION.

A—represents the Valve Stem.
B—is the Ring which is open and expansible, and is loosely attached to the Disks F and G by the Rib E E.
C—shows the wedge-shaped opening in the Ring.
D—is the Wedge which is attached to the Shell of the Valve at one side of the Seat with the point upward.
E E—is a Rib which is a part of the Ring.
F and G—are the Disks attached to the Valve-stem, which are upon either side of the Rib E, and by which the Ring is raised and lowered.

It will be seen that the open portion of the Ring (which passes in loosely) will be expanded by the Wedge, and that it will tightly close both openings when it reaches a point near the bottom of its seat.

This Valve never needs grinding, has a verticle motion only, or does not revolve, and leaves a clear and unobstructed passage for the flow of the liquid.



Section of Rock Pat. Ring Valve, Iron Body flanged.

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CLASS SECOND.

Plate 4.

No 40.



Iron Cock, flanged
No 46.



Cock Wrench

No 41



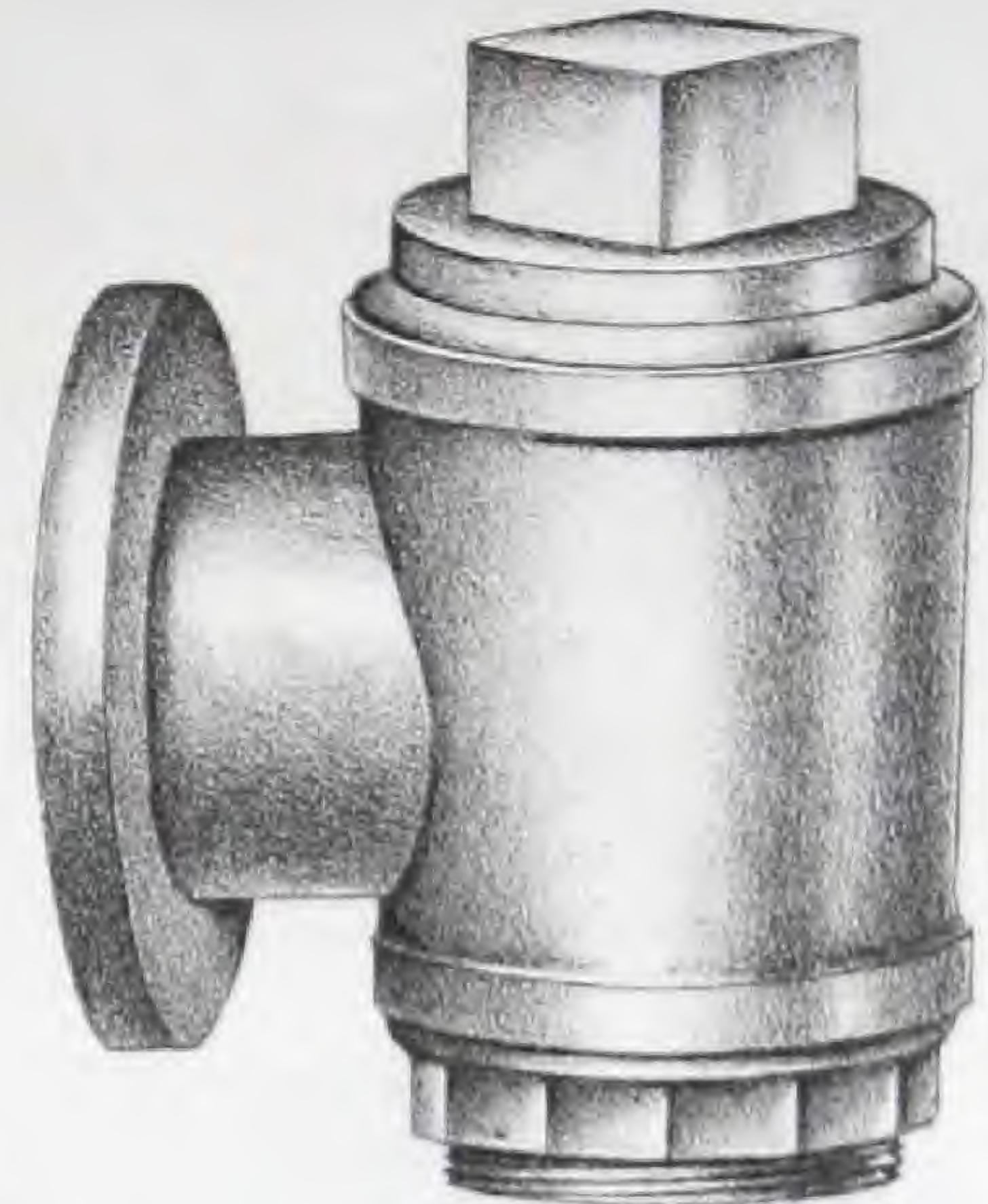
Brass Cock.

No 42.



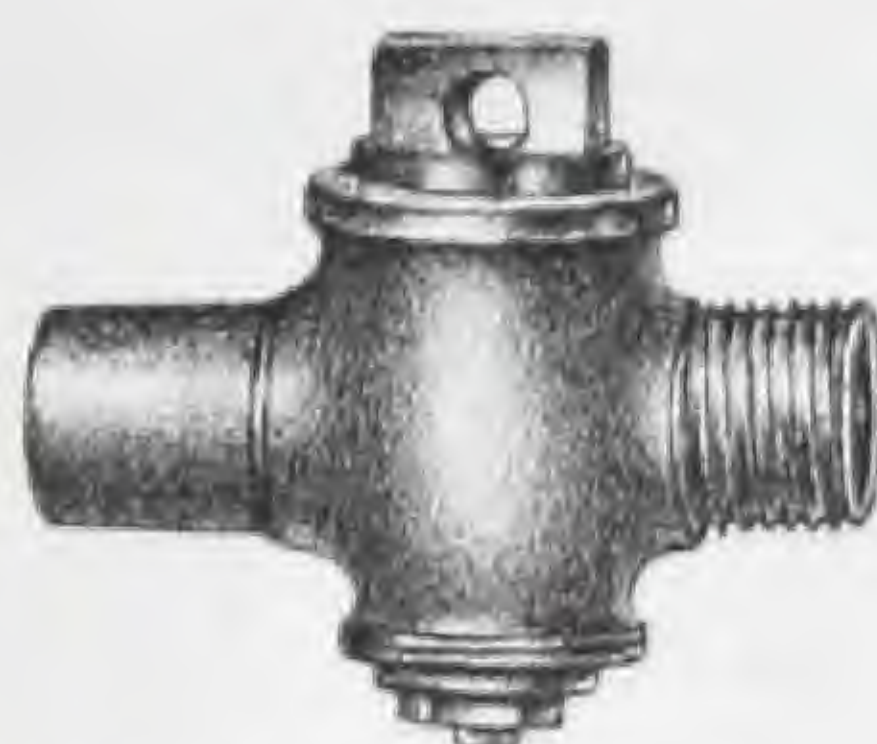
Iron Cock with
Brass or Iron Plug.

No 43.



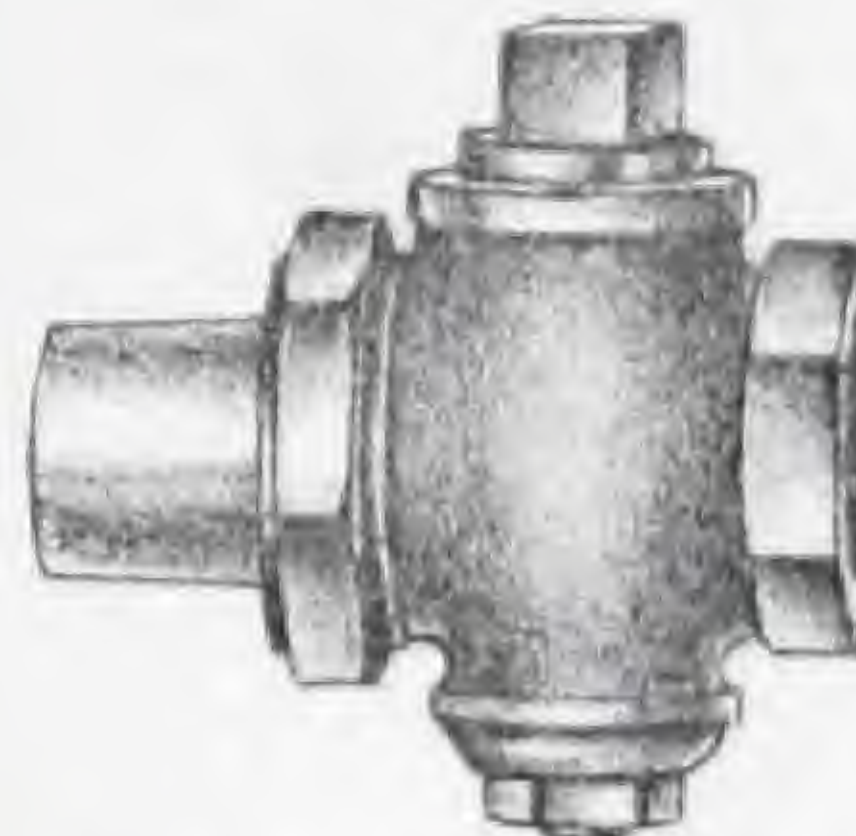
Angle Cock
for Sugar house use.

No 44.



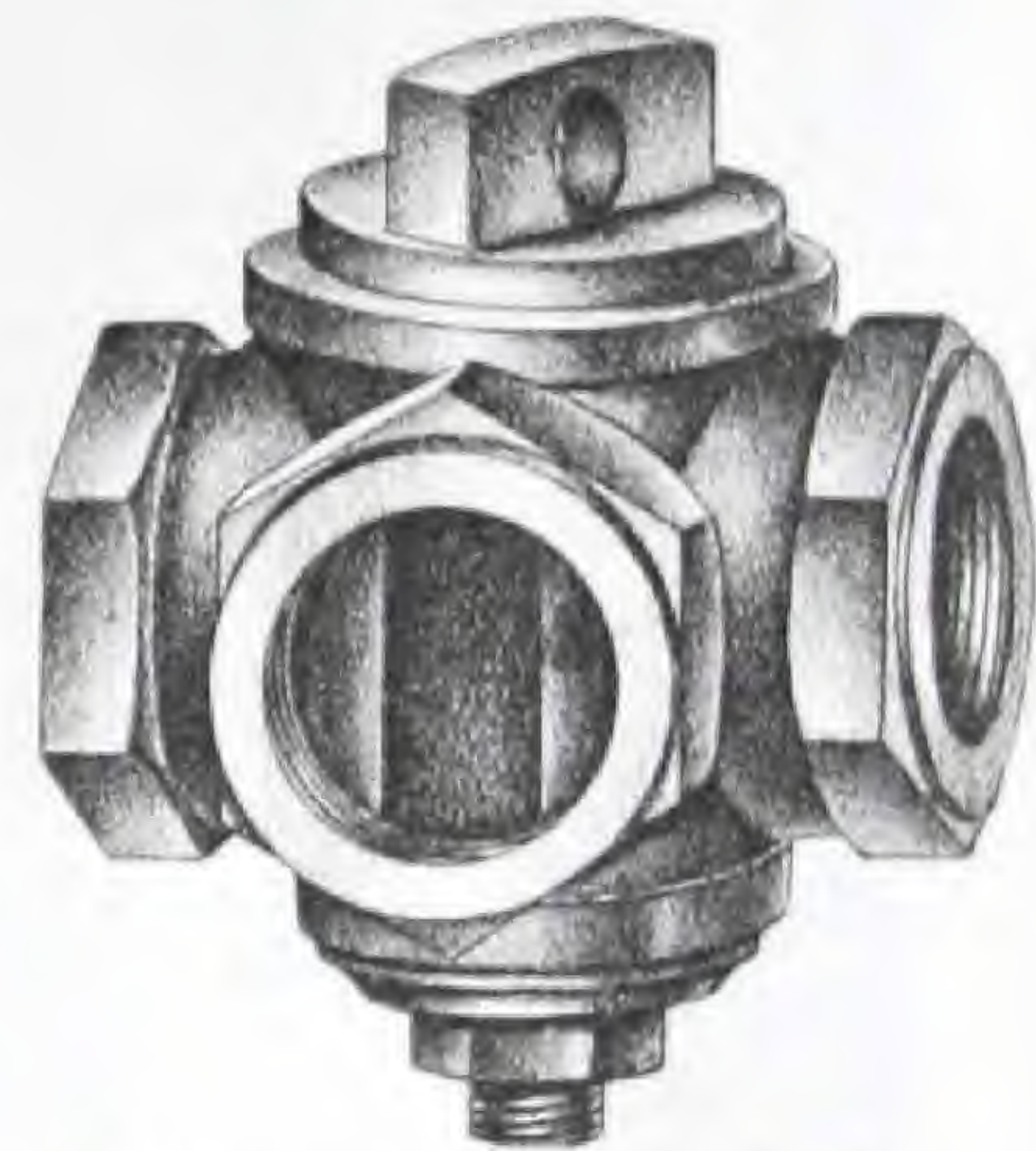
Gas Meter Cock,
one end Male screw the
other end solder.

No 45.



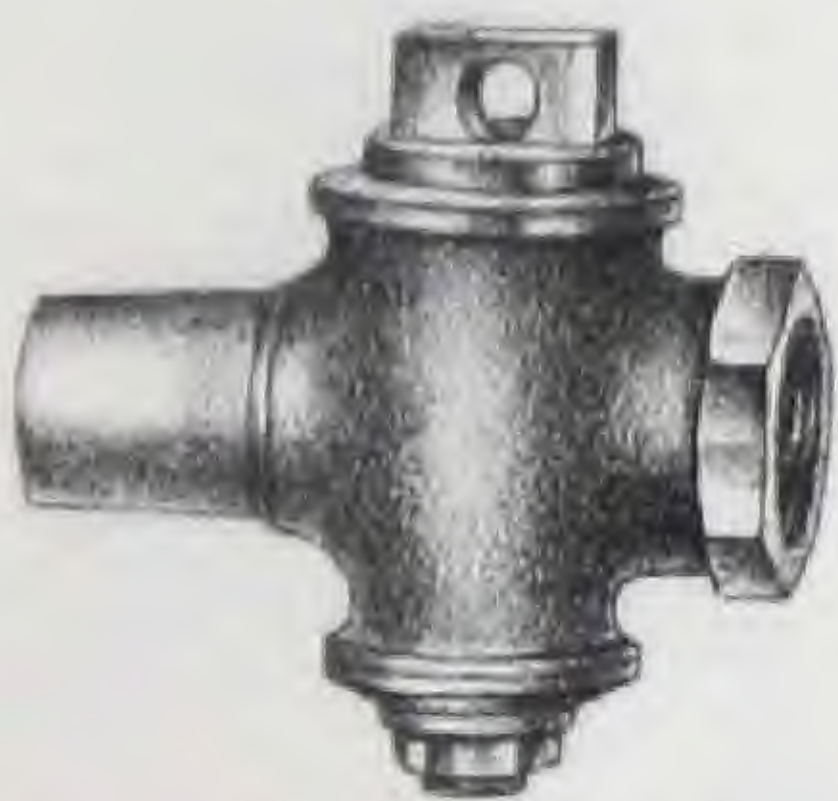
Brass Steam Cock
with soldering Union.
No 49.

No 50.



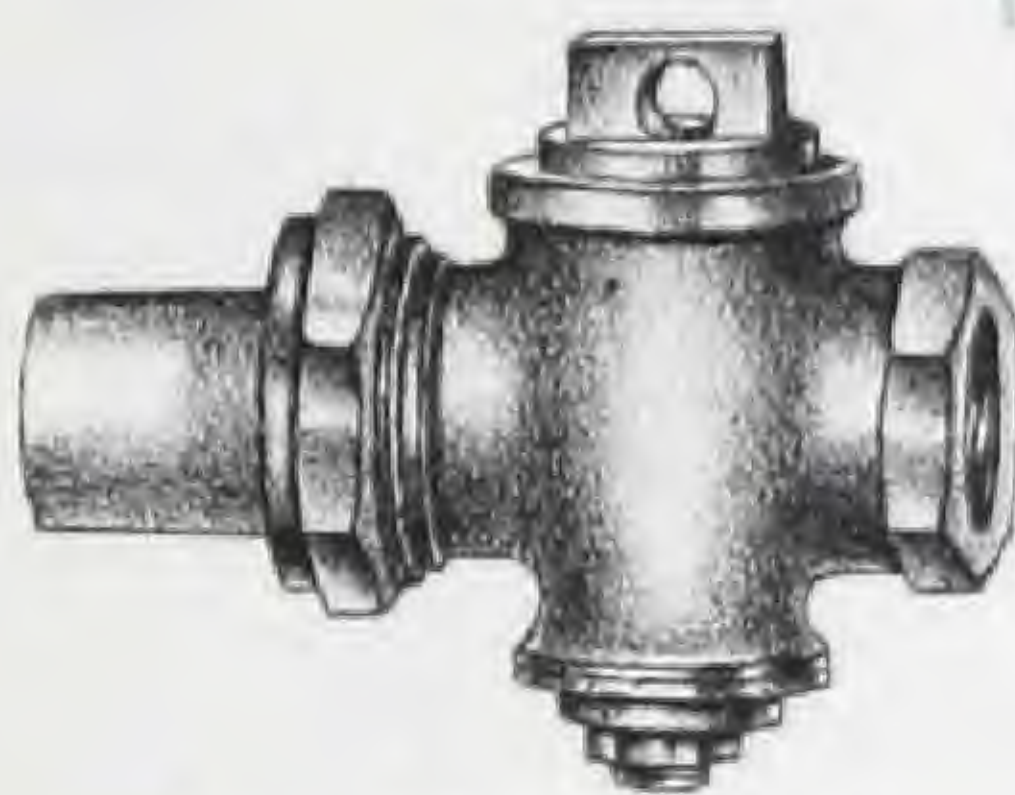
Threeway iron Cock.

No 47.

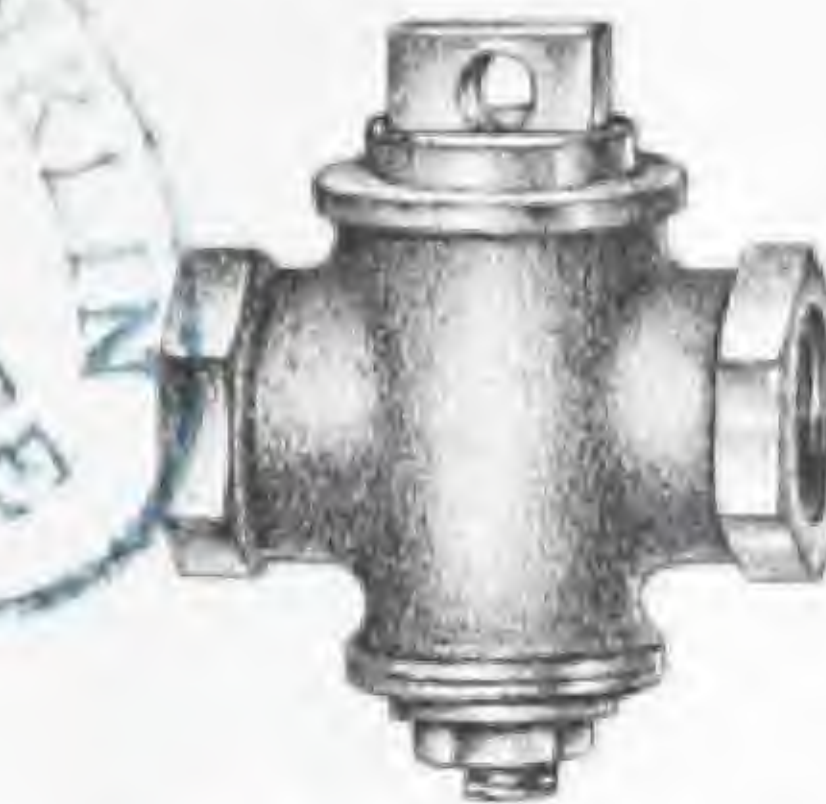


Gas Meter Cock.

No 48.

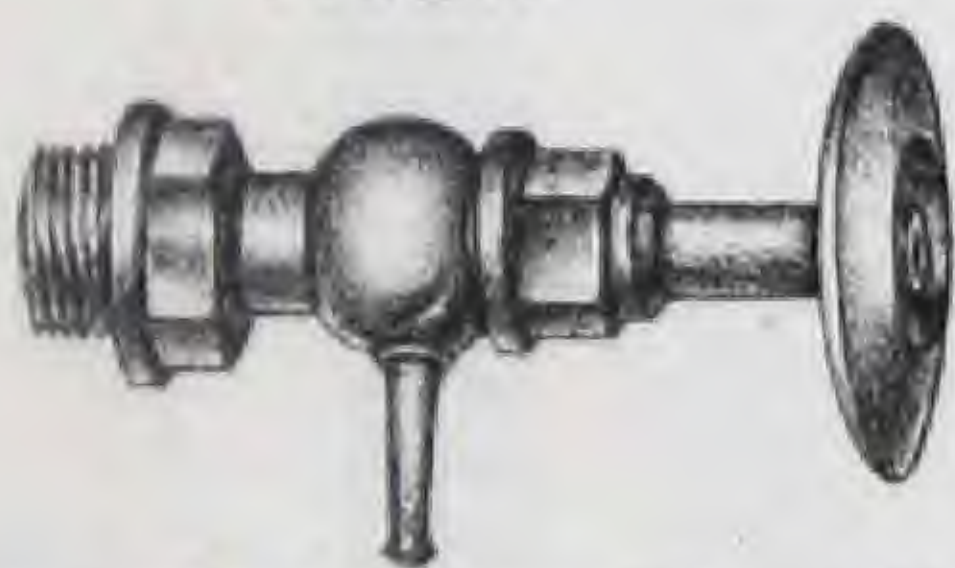


Gas Meter Cock
with soldering union.



Gas Service Cock.

No 51.



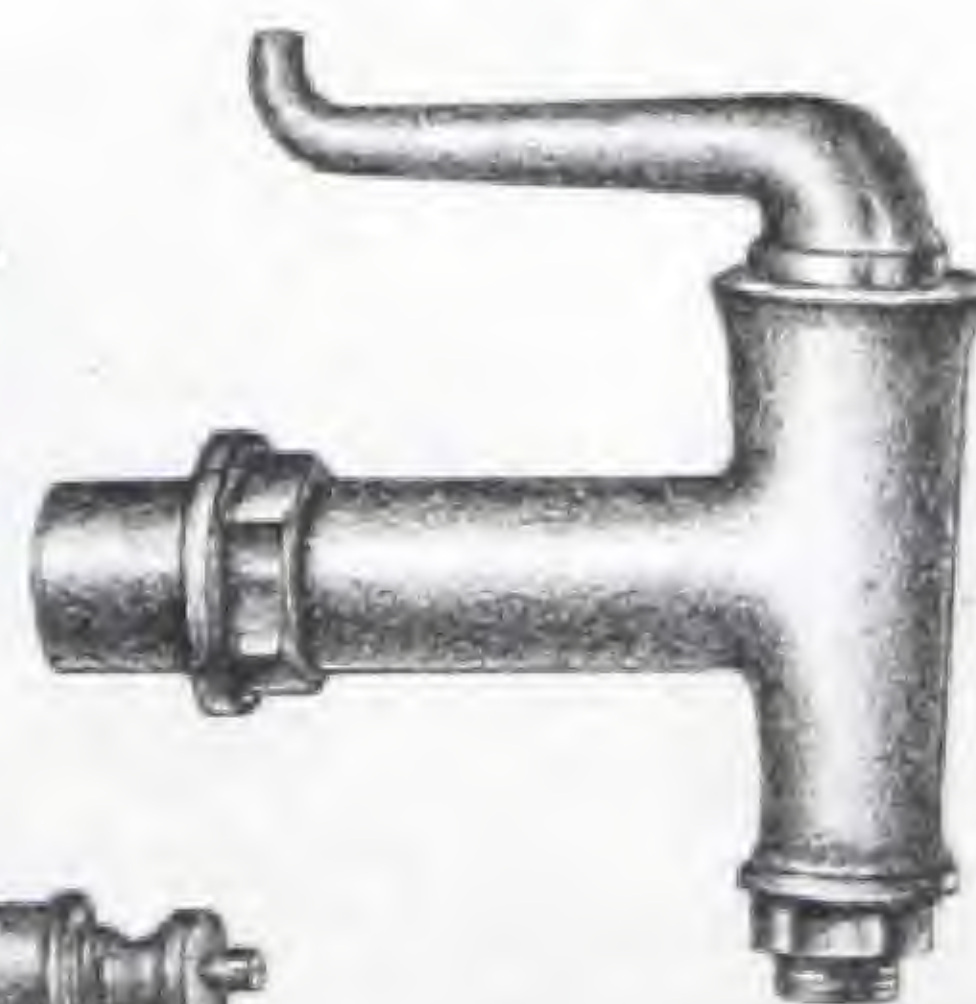
Gauge Valve, wooden Wheel.

No 52.



Gauge Cock,
Lever handle.

No 53.



Gauge Cock.

No 54.



Air or pet Cocks.

No 55.



New York
Gauge Cock.

No 56.



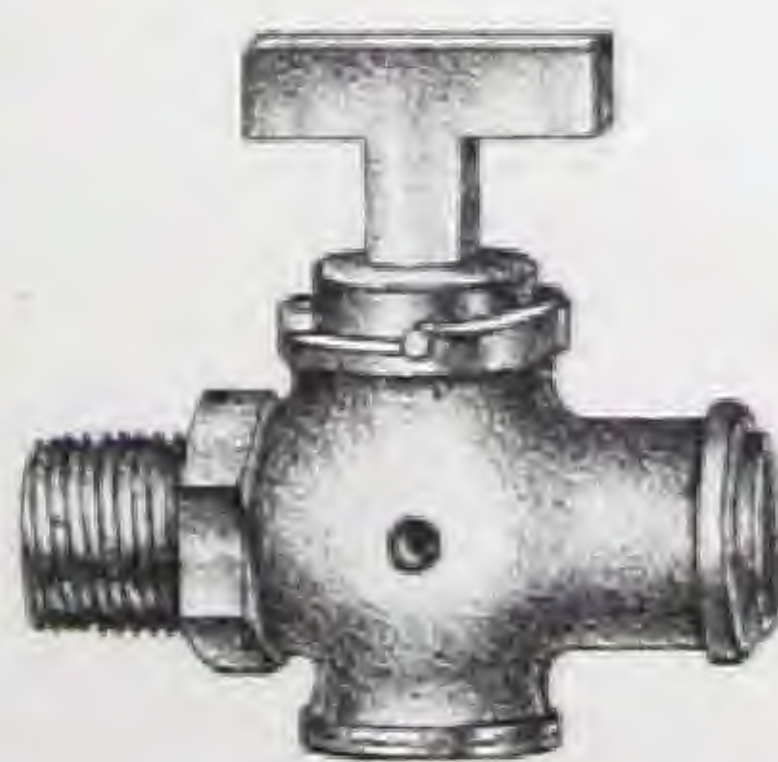
Mississippi Gauge Cock.

No 57.



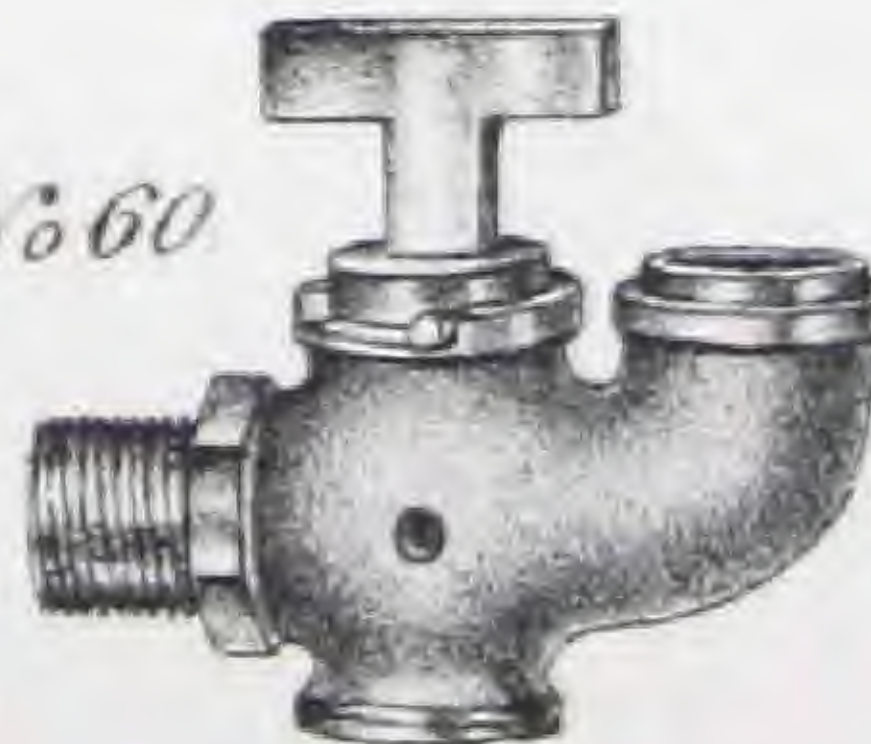
Gauge Cock.

No 58.



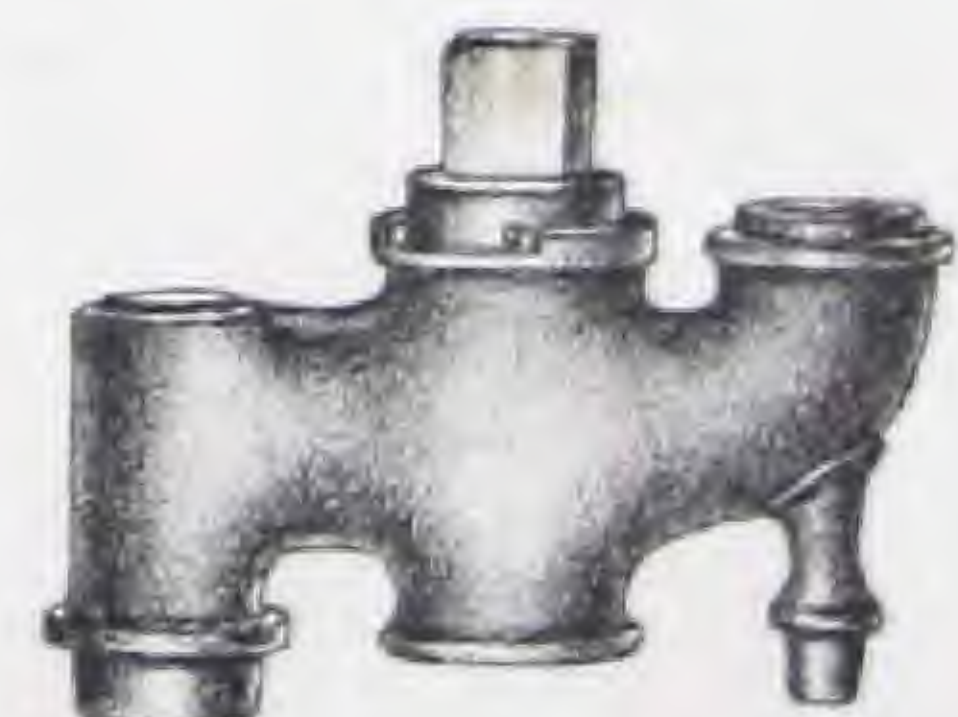
Straight Hydrant Cock
& waste.

No 60.



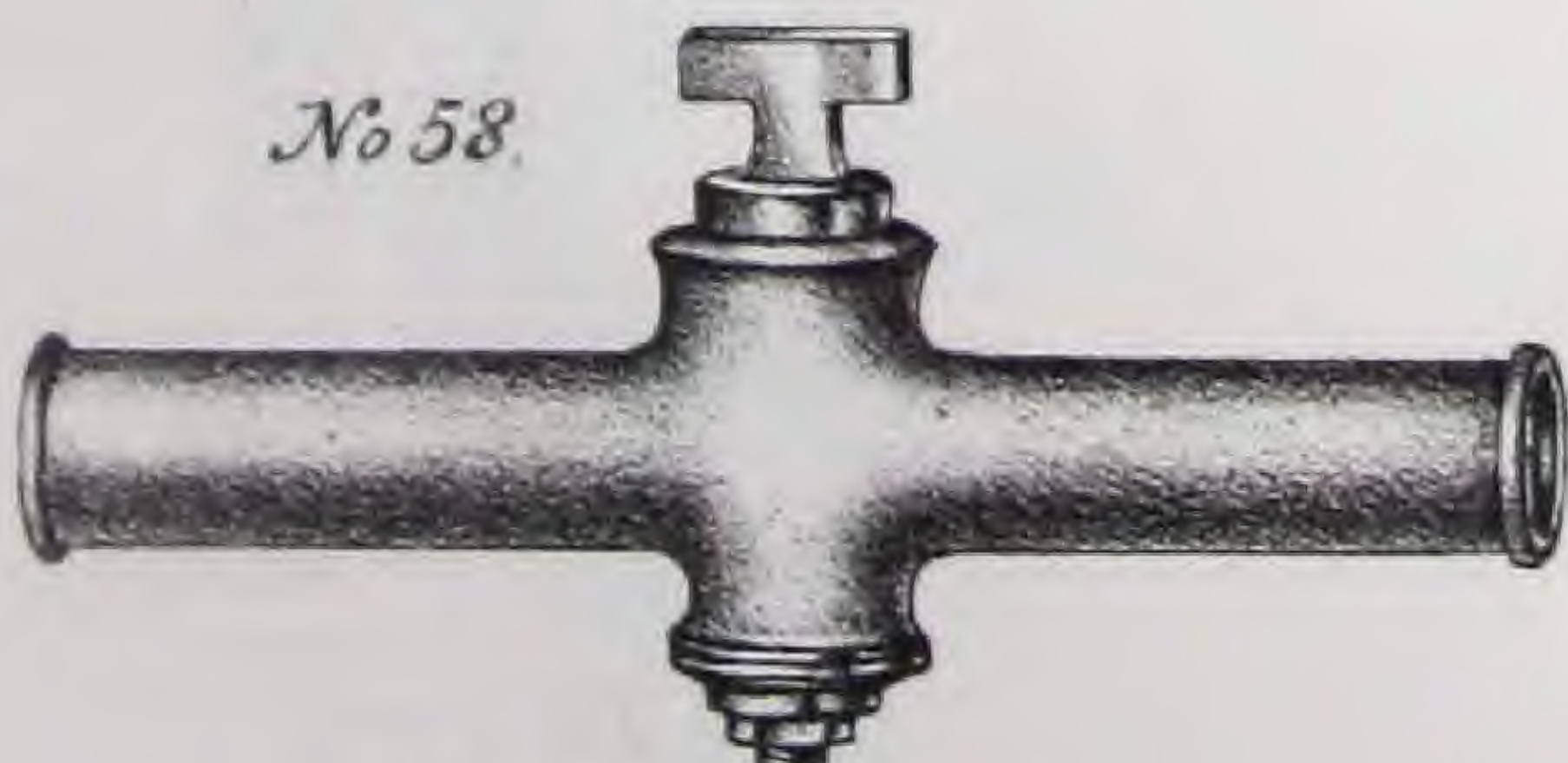
Crooked Hydrant Cock
& waste.

No 61.



Hydrant Cock.

No 58.



Iron pipe stop.



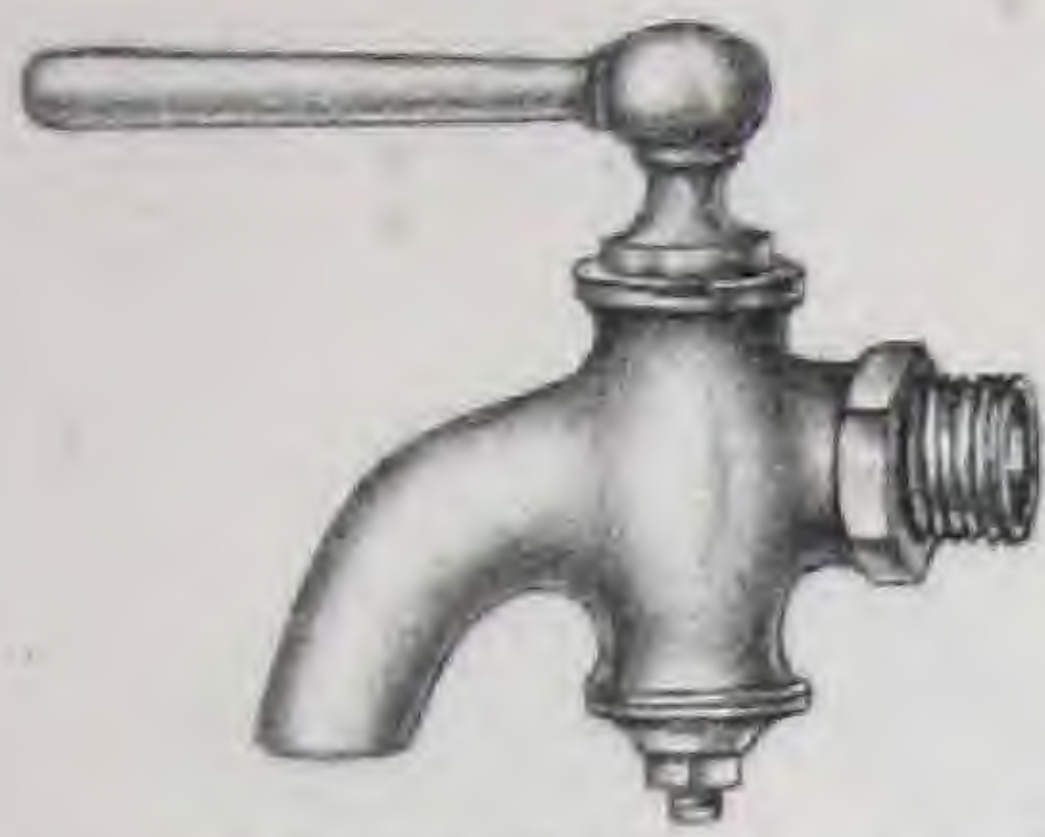
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CLASS SECOND.

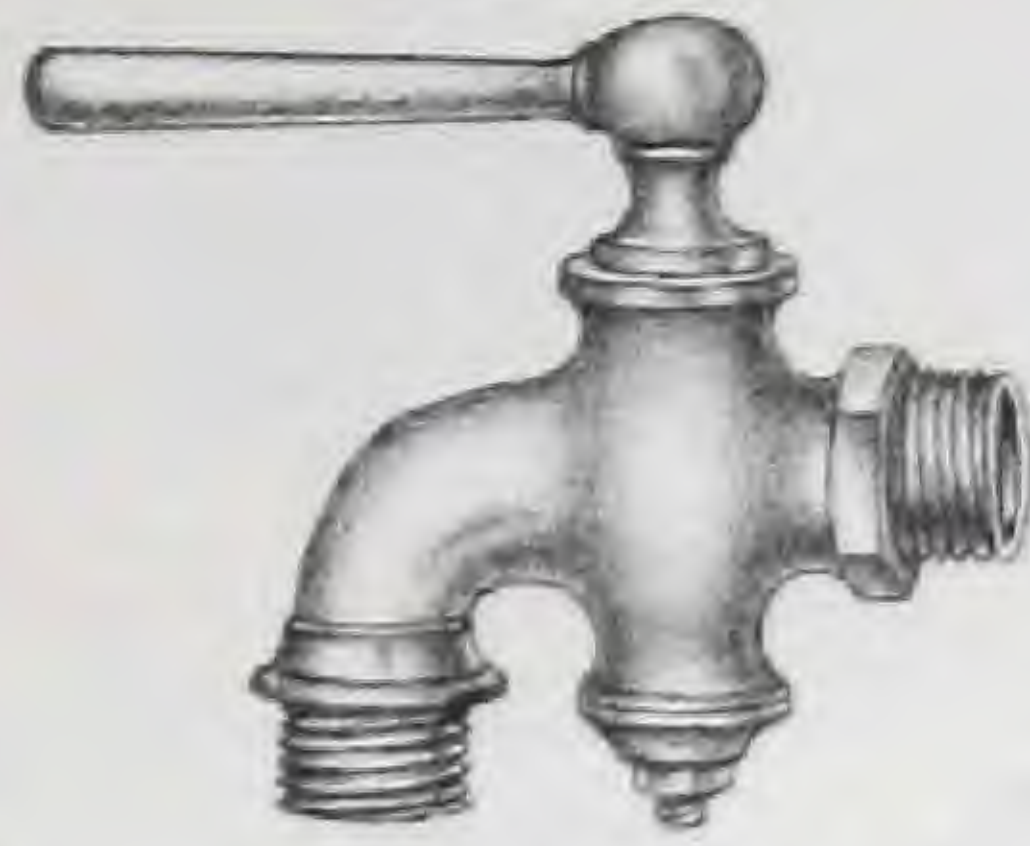
Plate 5.

No 65.



Brass Bibb Cock, Lever handle with male Screw.

No 66.



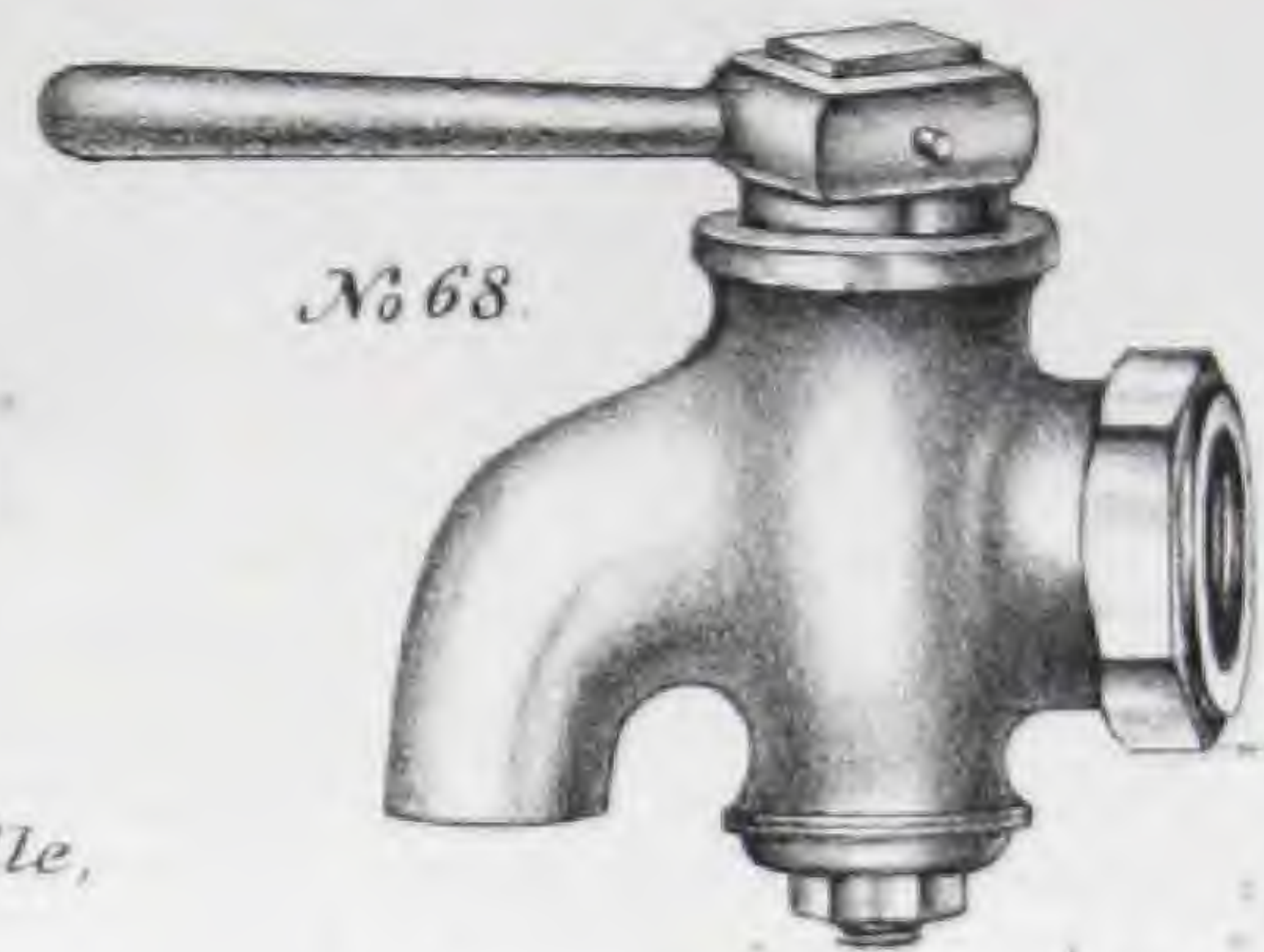
Brass Bibb Cock, Hose screw nozzle.

No 67.



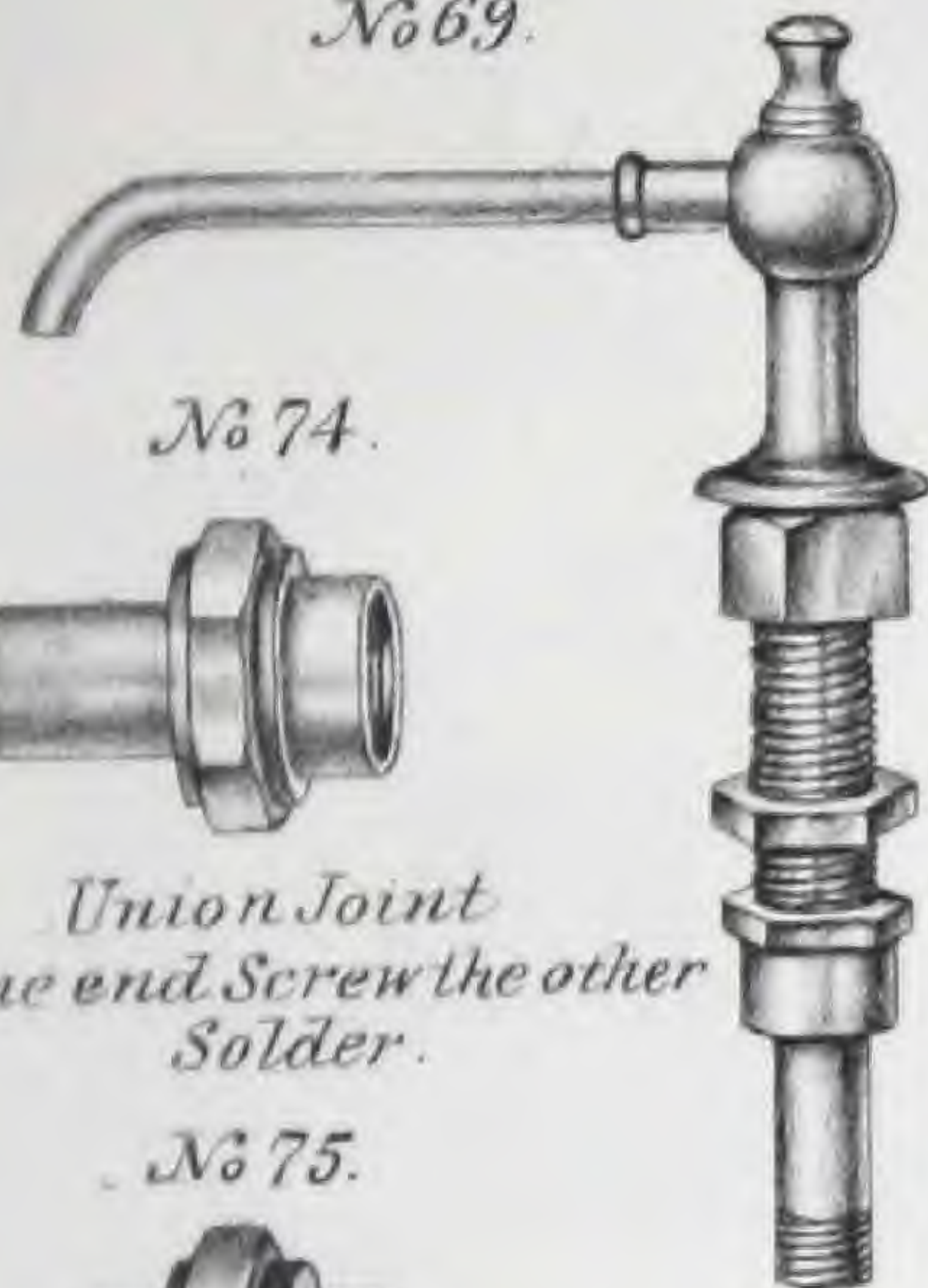
Brass Bibb Cock, Lever handle, plain end.

No 68.



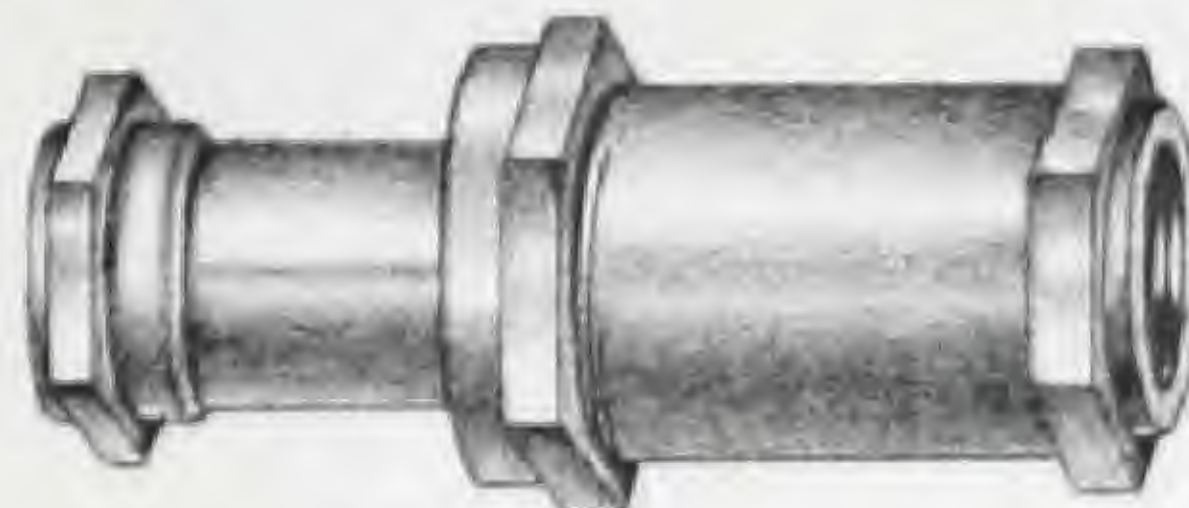
Large Bibb Cock, female Screw.

No 69.



Union Joint one end Screw the other Solder.

No 70.



Brass expansion Joint.

No 71.



Globe Oil Cup with double cocks & Air Cock.

No 72.



Oil Cup.

No 73.



Bath Boiler Union, straight.

No 75.



Union Joint both ends Screw.

Basin Cock.



No 76.



No 77.

Basin Plug & Chain.

No 78.



Bath tub Strainer.

No 79.



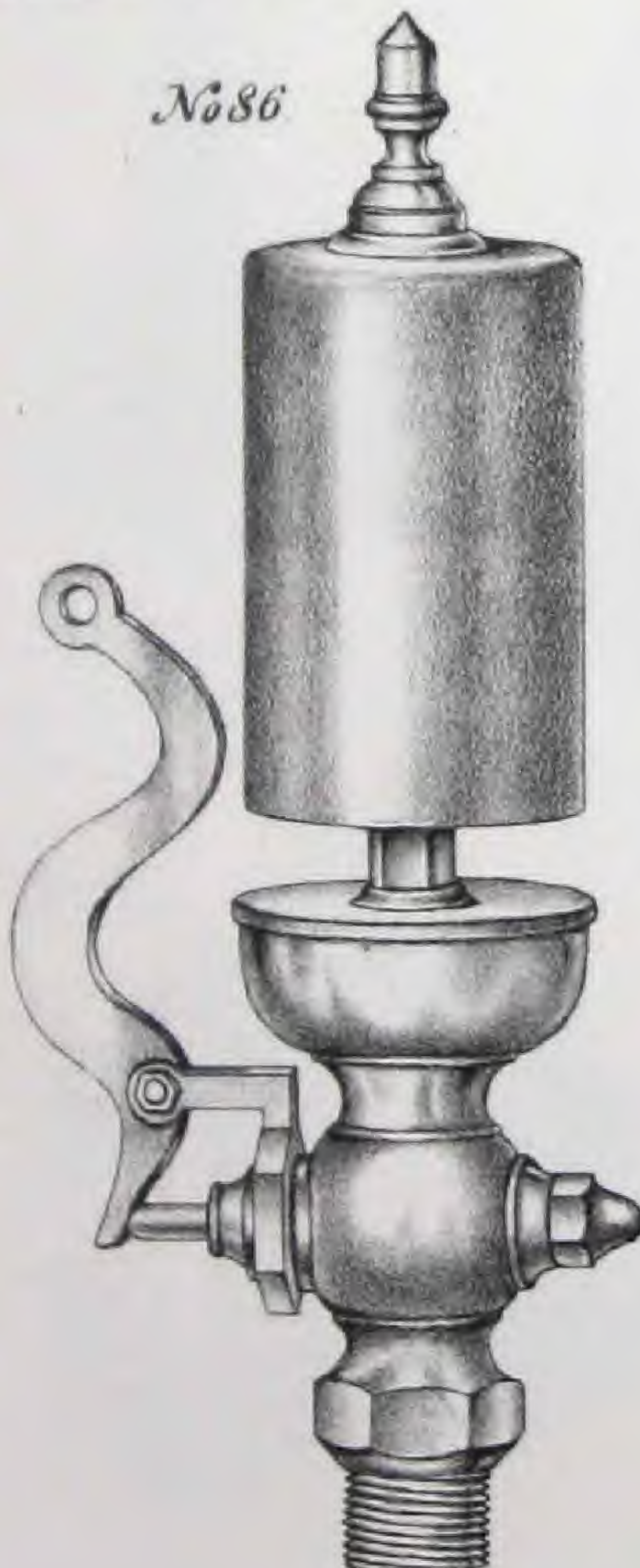
Wash tube waste and Plug.

No 80.



Bath Boiler Union, Goose neck.

No 86.



Steam Whistle.

No 81.



Boiler Ferrule.

No 82.



Soldering Nipple. Hose Nipple.

No 83.



Hose Nipple.

No 84.



Hose Nipple.

No 85.



Hose reducing Socket.

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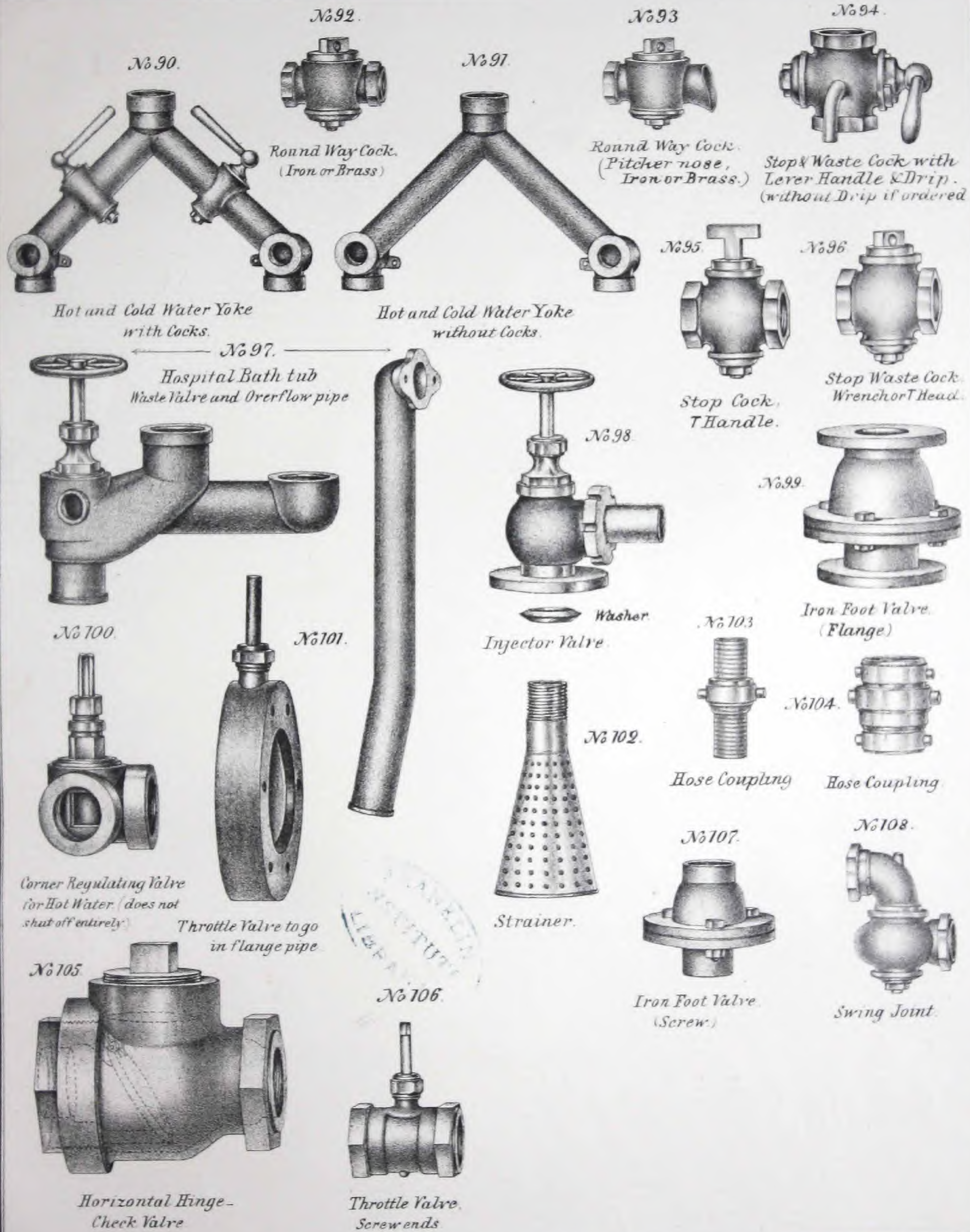
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CLASS SECOND.

Plate 6.



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Persons in ordering will please state the "Edition" they order from.

CLASS THIRD.

Every order for special articles must have accurate plans and dimensions attached, and no order, "same as before," will be received. Any article for which no price is quoted on the list will be made only to special order, although such article may be shown in the illustrations.

TOOLS FOR FITTING WROUGHT IRON TUBES.

The threads upon wrought iron tubes are as follows: on $\frac{1}{8}$ inch, 27 to the inch; on $\frac{1}{4}$ and $\frac{3}{8}$ inch, 18 threads to the inch; on $\frac{1}{2}$ and $\frac{3}{4}$ inch, 14 threads to the inch; on 1, $1\frac{1}{4}$, $1\frac{1}{2}$, and 2 inches, 11 $\frac{1}{2}$ threads to the inch; on $2\frac{1}{2}$ to 8 inches, 8 threads to the inch.

No.	PLATE.	SOLID DIES, P. W. (GATES' PATENT).		
1	1	2 inches square by $\frac{1}{2}$ inch thick, for $\frac{1}{8}$, $\frac{1}{4}$, or $\frac{3}{8}$ inch tubes,	3 inches square by $\frac{3}{4}$ inch thick, for $\frac{1}{2}$, $\frac{3}{4}$, or 1 inch tubes,	4 inches square by 1 inch thick, for $1\frac{1}{4}$, $1\frac{1}{2}$, or 2 inch tubes,
		Each, \$1.43	\$2.30	\$4.20
2	1	SCREWING STOCKS FOR SOLID DIES, (WITH GUIDES).		
3	1			
		No. 1. for $\frac{1}{4}$, $\frac{3}{8}$, and $\frac{1}{2}$ inch tubes,	No. 2. for $\frac{3}{4}$ and 1 inch tubes,	No. 3, (with leader screws,) for $1\frac{1}{4}$, $1\frac{1}{2}$, and 2 inch tubes,
		Each, \$2.75	\$3.90	\$7.05
		Same, complete with Dies, each, 7.05	8.50	19.65
		Guides for same, if wanted separate, each,25	.35	.50

TAPS, REAMERS, AND DRILLS.

		Diameter of Tube, in inches,	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4
4	1	Tap Wrenches,	\$0.95	\$0.95	\$1.00	\$1.00	\$2.05	\$2.05	\$2.05	\$3.35	\$3.35	\$4.25	\$4.25	\$5.00	\$5.00
5	1	Taps, right or left hand, . . . . .	.53	.65	.70	.95	1.32	1.68	1.91	2.31	3.41	5.22	7.37	9.95	13.34
6	1	Fluted Reamers,	1.50	1.60	1.80	2.00	2.50	3.05	3.75	4.50	6.50	9.00	12.00	16.75	22.00
7	1	Drills, . . . . .	.91	.91	.95	.98	1.04	1.14	1.23	1.35	1.56				
8	1	Chasers, (outside), . . . . .	.65	.65	.65	.65	.65	.65	.65	.65	.65	.65	.65	.65	.65
9	1	Chasers, (inside), . . . . .	.97	.97	.97	.97	.97	.97	.97	.97	.97	.97	.97	.97	.97
10	1	Eccentric Reamers, . . . . .	.96	1.00	1.05	1.33	1.80	2.41	2.56	3.06	4.19				
11	1	Stock and Dies for Brass Tubes,													\$12.00
12	1	Gas Fitters' Torches,													1.05
13	1	Gas Fitters' Blow-pipes,													1.10
14	1	Gas Fitters' Proving Pumps,						No 1, \$32.00			No. 2, \$34.00			No. 3, \$27.00	
15	1	Drip Pumps, for Gas Main Drips,													33.33
16	1	Patent Flue Cutter, $1\frac{1}{2}$ inch flues,													
		Each, \$16.00													
		Patent Flue Cutter, $1\frac{1}{2}$ and $1\frac{3}{4}$ inch flues,													
		Each, \$20.00													
		Patent Flue Cutter, 2 and $2\frac{1}{4}$ inch flues,													
		Each, \$22.50													
		Patent Flue Cutter, $2\frac{1}{2}$ and $2\frac{3}{4}$ inch flues,													
		Each, \$26.00													
		Patent Flue Cutter, 3 and $3\frac{1}{4}$ inch flues,													
		Each, \$30.50													
		Patent Flue Cutter, $3\frac{1}{2}$ and $3\frac{3}{4}$ inch flues,													
		Each, \$36.00													
17, 23	1	Universal Gas Tube Vise,							No. 17, $\frac{1}{4}$ to 2 inch tube,				No. 23, $\frac{1}{4}$ to 4 inch tube,		
		Each,							\$22.80				\$42.40		
18	1	Same, with Bench piece, without stand,							14.80						
		Set of New Dies for same, per set,													\$5.00
19	1	Vise Clamp for holding tubes in an ordinary vise, each,													9.00
20	1	Breast Drill, each,													8.15
21	1	Crow for Drilling and Tapping Street Mains,							$1\frac{1}{2}$ to 3 inch mains,		3 to 6 inch mains,		4 to 12 inch mains,		
		Each,							\$11.25		\$14.25		\$18.62		
22	1	Ratchet Wrench, each,													\$17.60
		Diameter of Tubes, in inches,													
				$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5	6	7	8			
30	2	Clevis Tongs,		\$5.40	\$6.20	\$7.00	\$8.00	\$9.10	\$10.00	\$12.50	\$15.00	\$18.00			
		Extra Hooks for same,		1.80	2.10	2.40	2.60	3.00	3.55	4.20	5.00	5.50			

CLASS THIRD.—*Continued.*

No.	PLATE.		No. 31.	No. 32.	No. 33.	No. 34.	No. 35.			No. 36.	No. 37.			No. 38.	No. 39.	No. 40.	No. 41.		
	2						1	2	3		1	2	3						
		Chisels	cold,	cape,	wall drill,	diamond,	calking,			set,	driving,			wood,	plaster,	long wood,	floor,		
		Each,	\$0.56	\$0.58	\$0.51	\$0.61	\$0.85	\$0.77	\$0.56	\$0.36	\$1.15	\$0.85	\$0.82	\$0.60	\$1.84	\$1.13	\$2.12		
42	2	Augers,	$\frac{1}{4}$ inch tube,	$\frac{3}{8}$ inch tube,	$\frac{1}{2}$ inch tube,	$\frac{3}{4}$ inch tube,	1 inch tube,			$1\frac{1}{4}$ inch tube,	$1\frac{1}{2}$ inch tube,	2 inch tube,							
		Each,	\$1.12	\$1.12	\$1.50	\$1.87	\$2.25			\$2.62	\$3.00			\$3.37					
43	2	Wolfkiel's Patent Wrench,	No. 1.																
			$\frac{1}{2}, \frac{5}{8}, \frac{3}{4}$ inch bolts, . . \$3.75.																
44	2	Foster's Patent Tube Cutter,	No. 2.																
			$\frac{7}{8}, 1, 1\frac{1}{2}$ inch bolts, . . \$4.75.																
			$1\frac{1}{4}, 1\frac{1}{2}, 2$ inch bolts, . . \$7.75.																
			No. 1.																
			$\frac{1}{4}$ to 1 inch tubes,																
		Each,	\$8.00																
		Knives for same,	.60																
		Rolls for same,	.30																
45	2	Dudgeon's Patent Tube Expander.	No. 2.																
		External Diameter of Tube, in inches,	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	$1\frac{7}{8}$	2	$2\frac{1}{4}$	$2\frac{1}{2}$	$2\frac{3}{4}$	3	$3\frac{1}{4}$	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5	6	7
		Each,	\$20	\$20	\$20	\$25	\$25	\$30	\$35	\$42	\$48	\$55	\$60	\$70	\$85	\$100	\$120	\$130	\$180
46	2	Stanwood's Patent Tube Cutter,	No. 1.																
			$\frac{1}{8}$ to $\frac{3}{4}$ inch tubes,																
		Each,	\$7.50																
		Wheels for same,	.56																
			No. 2.																
			$\frac{3}{4}$ to 2 inch tubes,																
			\$9.00																
			No. 3.																
			2 to 3 inch tubes,																
			\$18.00																
			1.20																
47	2	Peake & Guillaudeu's Patent Wrench,	No. 1.																
			No. 2.																
			16 inch arm,																
			1 to 2 inches square,																
		Each,	\$3.50																
48	2	Tube Tongs.	No. 3.																
		Diameter of Tubes, in inches,	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4				
		Price, per pair,	\$1.00	\$1.10	\$1.20	\$1.30	\$1.55	\$2.00	\$2.20	\$2.55	\$3.35	\$4.30	\$4.75	\$5.75	\$6.75				
49	2	Brown's Patent Adjustable Tongs,	No. 4.																
			$\frac{1}{8}$ to $\frac{3}{4}$ tube,																
		Per pair,	\$3.00																
			No. 2.																
			$\frac{1}{4}$ to $1\frac{1}{2}$ tube,																
			\$4.00																
			No. 3.																
			1 to $2\frac{1}{2}$ tube,																
			\$5.00																
			No. 4.																
			$1\frac{1}{4}$ to 3 inch,																
			\$9.00																
			No. 5.																
			$2\frac{1}{2}$ to 4 inch,																
			\$12.00																
50	2	Meter and Burner Pliers,	No. 5.																
			$\frac{3}{8}$ to $\frac{1}{2}$ inch tube																
		and burner,	$\frac{1}{4}$ to $\frac{3}{8}$ inch tube																
		Per pair,	\$0.95																
			No. 0.																
			$\frac{1}{4}$ to $\frac{3}{8}$ inch tube																
			and burner,																
			\$1.10																
			No. 1.																
			$\frac{1}{8}$ to $\frac{3}{8}$ inch tube																
			and burner,																
			\$2.20																
			No. 2.																
			$\frac{1}{8}$ to $\frac{1}{2}$ inch tube																
			and burner,																
			\$2.75																
			No. 3.																
			$\frac{1}{8}$ to $\frac{3}{4}$ inch tube																
			and burner,																
			\$3.30																
			No. 4.																
			$\frac{3}{8}$ to 1 inch tube,																
			\$3.85																
			No. 5.																
			$\frac{1}{8}$ to 1 inch tube																
			and burner,																
			\$4.40																
51	2	Moore's Patent Wrench,	No. 4.																
			8 inch lever,																
			for $\frac{3}{8}, \frac{1}{2},$ and $\frac{5}{8}$ inch squares,																
			$\frac{5}{8}$ and $\frac{3}{4}$ inch hexagon,																
		Each,	\$3.00																
			No. 2.																
			10 inch lever,																
			$\frac{3}{4}$ and $\frac{7}{8}$ inch squares,																
			$\frac{7}{8}$ and 1 inch hexagon,																
			\$4.00																
			No. 3.																
			14 inch lever,																
			1 and $1\frac{1}{4}$ inch squares,																
			$1\frac{1}{8}$ and $1\frac{3}{8}$ inch hexagon,																
			\$5.00																
			No. 4.																
			16 inch lever,																
			$1\frac{1}{2}$ and $1\frac{3}{4}$ inch squares,																
			$1\frac{1}{2}$ and $1\frac{3}{4}$ inch hexagon,																
			\$7.00																
52	2	Moore's Patent Drill,	No. 4.																
			16 inch lever,																
		Each,	\$10.00																
53	2	Extra Wrench Gears, for Moore's Patent Wrench,	No. 3.																
			14 inch lever,																
			\$8.00																
			No. 2.																
			10 inch lever,																
			\$6.50																
			No. 1.																
			8 inch lever,																
			\$5.00																
			.50																
			.60																
			.75																
			1.00																

SCREWING STOCKS FOR CUTTER DIES, (WITH LEADER SCREW AND GUIDES).

1	3	Solid Dies, see price list before given.		
58	3			
			No. 4.	No. 5
			for 2½ and 3 inch tubes,	for 3½ and 4 inch tubes,
		Each, complete,	\$29.25	\$34.05
		* Sets of Cutters for the above, (each set of 4 cutters),	8.50	9.50
		Guides for same, if wanted separate, each, . . . . .	.80	1.00

* It is best to return the stocks for cutter dies, if a new set of cutters is wanted; but if the stock has a number upon it, (which those lately made have), we can furnish a set of cutters likely to fit, if the grooves are not worn.

FRANKLIN
INSTITUTE
LIBRARY

HAND SCREWING MACHINE, No. 1.

No.	PLATE.
59	3 For $\frac{1}{8}$ to $1\frac{1}{2}$ inch tube, with Universal Chuck and Cutting-off and Screwing Head, Solid Dies. Complete, . . . \$85.00

HAND SCREWING MACHINE, No. 2.

60	3	For $\frac{1}{4}$ to 2 inch tubes, with Fly Wheel, Universal Chuck and Cutting-off and Screwing Head, Solid Dies. (This machine differs from power machines, as shown in dotted lines). Complete,	219.00
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POWER SCREWING MACHINE, No. 2.

60	3	<p>For $\frac{1}{4}$ to 2 inch tubes, with Cone Pulleys and Countershaft, Universal Chuck and Cutting-off and Screwing Head, Solid Dies. (It is not safe to have a Fly Wheel with a Power Machine). Complete,</p> <p>Countershaft to run 150 revolutions per minute, having 10 inch pulleys for 4 inch belts. The cones and change gears give the following speeds:</p>	232.00
----	---	--	--------

Fast Gears, $\begin{cases} \frac{1}{2} \text{ and } \frac{3}{8} \text{ inch tubes, } 71\frac{1}{2} \text{ revolutions per minute.} \\ \frac{1}{2} \text{ and } \frac{3}{4} \text{ inch tubes, } 40 \quad \quad \quad \text{ " } \quad \quad \quad \text{ " } \quad \quad \quad \text{ " } \end{cases}$

Articles belonging to No. 2 Hand or Power Machines, if wanted separate :

For altering a Hand Machine to a Power Machine, including Countershaft and Cone Pulleys,	45.00
Countershaft for No. 2 Machine, without Cone Pulleys,	26.50
Spare Bevel Pinions, fitted and key-seated for repairs (3),	6.60
Spare Bevel Wheels, fitted and key-setted for repairs, lower, \$2.00; main,	6.50

1	4	Solid Dies, see price list before given.
---	---	--

SCREWING MACHINE, No. 3. IMPROVED.

63	<p>4 For $\frac{3}{8}$ to 4 inch tube, with Countershaft, Universal Chuck and Cutting-off and Screwing Head. Made to use Solid Dies $\frac{3}{8}$ to 2 inch, and Cutter Dies 2$\frac{1}{2}$ to 4 inch. Complete,</p>	592.00
----	---	--------

Countershaft to run 125 revolutions per minute, having 14 inch pulleys for 4 inch belts, giving the following speeds:

Fast Gears, $\left\{ \begin{array}{ll} \frac{3}{8} \text{ and } \frac{1}{2} \text{ inch tubes, } 76 \text{ revolutions per minute.} \\ \frac{3}{4} \text{ and } 1 \text{ inch tubes, } 41 & \text{"} & \text{"} \\ 1\frac{1}{4} \text{ and } 1\frac{1}{2} \text{ inch tubes, } 26 & \text{"} & \text{"} \end{array} \right.$	Slow Gears, $\left\{ \begin{array}{ll} 2 \text{ inch tubes, } 18 \text{ revolutions per minute.} \\ 2\frac{1}{2} \text{ and } 3 \text{ inch tubes, } 11\frac{1}{2} & \text{"} & \text{"} \\ 3\frac{1}{2} \text{ and } 4 \text{ inch tubes, } 7\frac{1}{2} & \text{"} & \text{"} \end{array} \right.$
--	--

HAND SCREWING MACHINE, No. 3.

63	4	For $\frac{3}{8}$ to 4 inch tubes, with Universal Chuck and Cutting-off and Screwing Head, made to use Solid Dies $\frac{3}{8}$ to 2 inch, and Cutter Dies $2\frac{1}{2}$ to 4 inch,	538.00
		Hand-gearing, extra, can be supplied for No. 3 Machine, as shown in dotted lines,	20.00
		(With this hand-gearing one man can cut and screw any size of tube up to 4 inch).	
		Countershaft for No. 3 Machine, without Cone Pulleys,	53.60

DIES WITH CUTTERS FOR NOS. 3 AND 4 SCREWING MACHINES.

64	}	4	2 inches,	2½ or 3 inches,	3½ or 4 inches,	4½ or 5 inches,	6 inches,		
79		5	Each,	\$20.38	\$20.51	\$21.58	\$24.25	\$28.80	
			Sets of Cutters for the above, each set,	8.00	12.00	12.00	12.00	16.00	
64		4	Cutter Dies, see price list before given.						
65, 66		4	Reducing Pieces for 2 and 3 inch square dies in Die Holder, each,	.	.	.	.	\$0.46
67		4	Reducing Pieces to hold 2 inch square dies in Screwing Head, each,	.	.	.	.	.10
68, 69		4	Bushings and Guides for Carrying Tubes in Spindle and Cutting Head, per pair,	.	.	.	.	1.35
			Rest Slide for Rest at Back of Spindle, per pair,	.	.	.	.	8.10
70		4	Guides for Cutting Head, ⅜ to 4 inches, each,	.	.	.	.	.70
71		4	Die Holders for Solid Dies, each,	.	.	.	.	5.45
72		4	Internal Chuck for Gripping Tubes in No. 3 Screwing Machine, each,	.	.	.	.	40.00
73		4	Internal Chuck for Gripping Tubes in No. 1 Screwing Machine, each,	.	.	.	.	16.50
73		4	Internal Chuck for Gripping Tubes in No. 2 Screwing Machine, each,	.	.	.	.	20.00

CLASS THIRD.—*Continued.*

SCREWING MACHINE, No. 4.

No. PLATE.

- 76 5 For 1 inch to 6 inch tube, with Countershaft, Universal Gripping Chuck, Universal Steady Rest in Cutting Head, Universal Rest for back of Spindle, Gate for Carrying Screwing Dies, etc., etc., made to use Solid Dies 1 to 2 inch, and Cutter Dies $2\frac{1}{2}$ to 6 inch. Complete, \$1214.00

Countershaft to run 120 revolutions per minute, having 20 inch pulleys for 4 inch belts, giving the following speeds:

Fast Gears,	{	1 inch tube,	40 revolutions per minute.	Slow Gears,	{	2½ and 3 inch tubes,	11½ revolutions per minute.
		1¼ and 1½ inch tubes,	28 " "			3½ and 4½ inch tubes,	8 " "
		2 and 1½ inch tubes,	19½ " "			5 and 6 inch tubes,	5½ " "

Articles belonging to No. 4 Machine, if wanted separate:

See view of machine.	{ Rest Slides for Universal Rest at back of Spindle, per pair,		9.22
	{ Large Steel Gripping Dies for Chuck for $2\frac{1}{2}$ to 6 inch tubes, per pair,		
	{ Small Steel Gripping Dies for Chuck for 1 to 2 inch tubes, per pair,		
	{ Large Steel Rest Dies for Cutting Head for $2\frac{1}{2}$ to 6 inch tubes, per pair,		
	{ Small Steel Rest Dies for Cutting Head for 1 to 2 inch tubes, per pair,		

Also, there can be supplied for No. 4 Machine, (as shown in dotted lines for No. 3 Machine, on plate 4,) hand-gearing, extra, . . . 20.00

(With this two men can easily cut and screw 5 and 6 inch tubes, and one man any smaller size).

[We have an arrangement of counter-hanging, with mitre gears, so that No. 3 Screwing Machine can be placed conveniently in the workshop, when the line of shafting will not allow the use of an ordinary countershaft.] Price, extra, 32.00

- 77 5 Die Holder for Solid Dies, each, 5.45
- 78, 79 5 Solid and Cutter Dies, see price list before given.

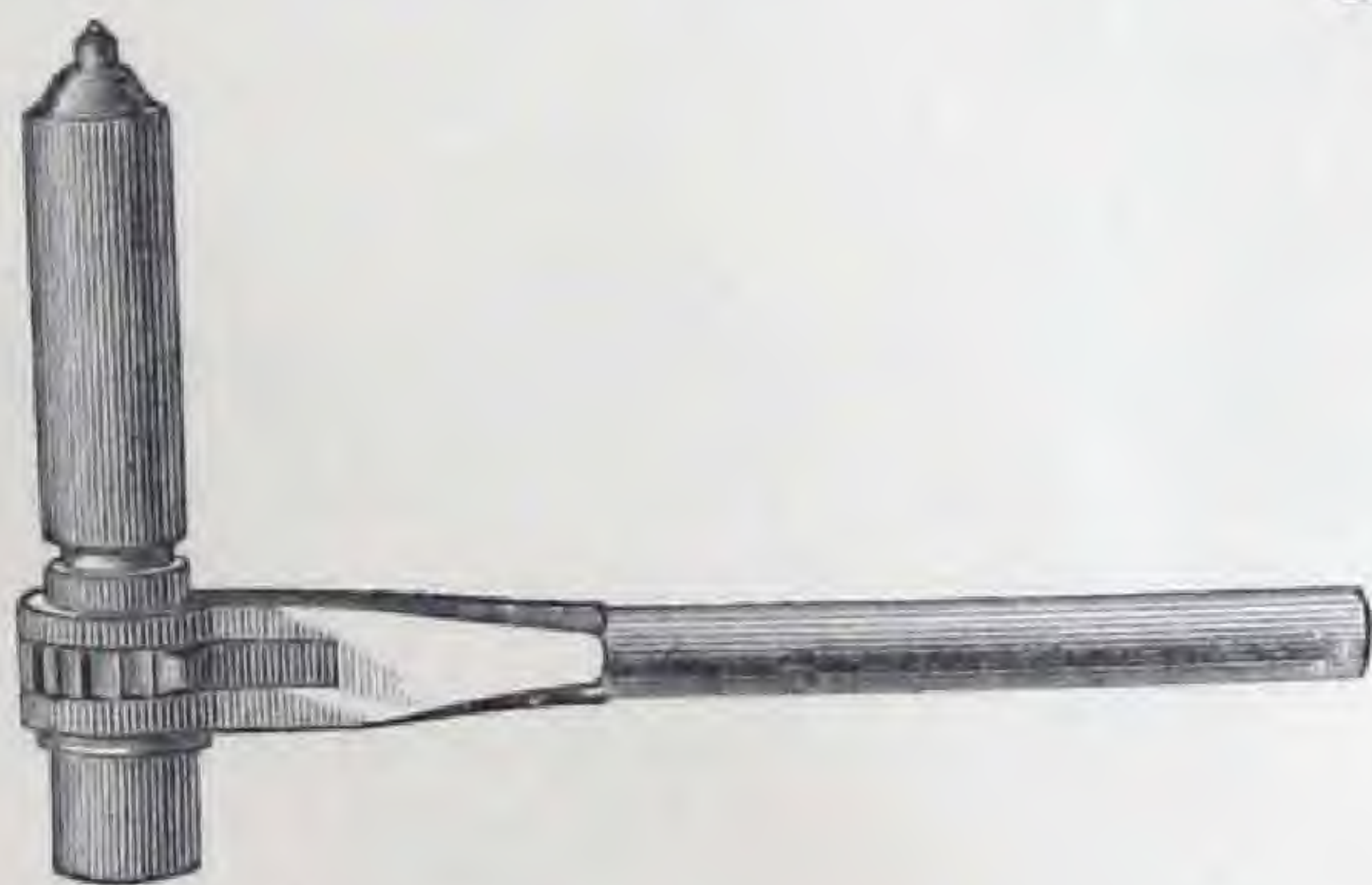
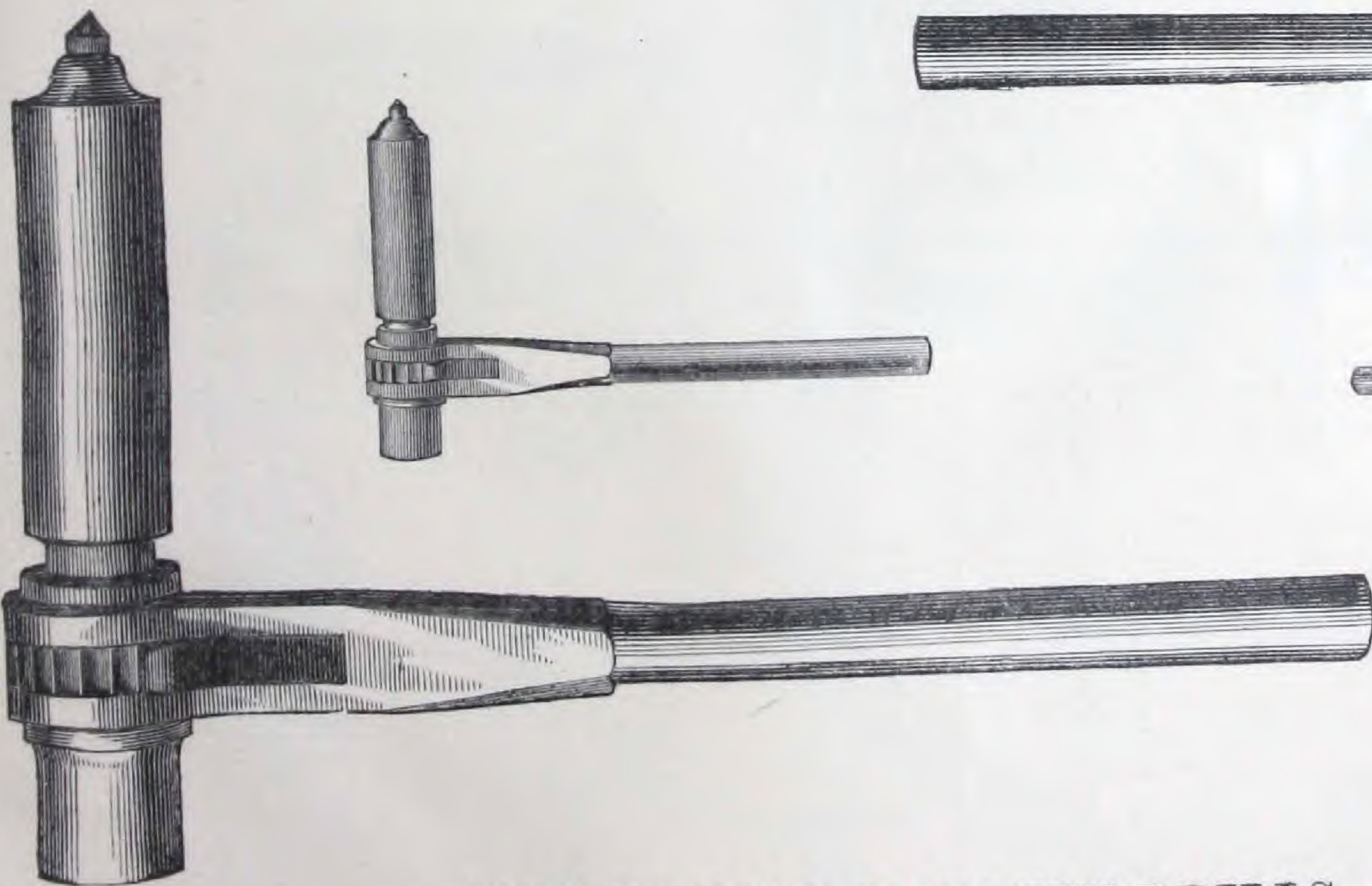
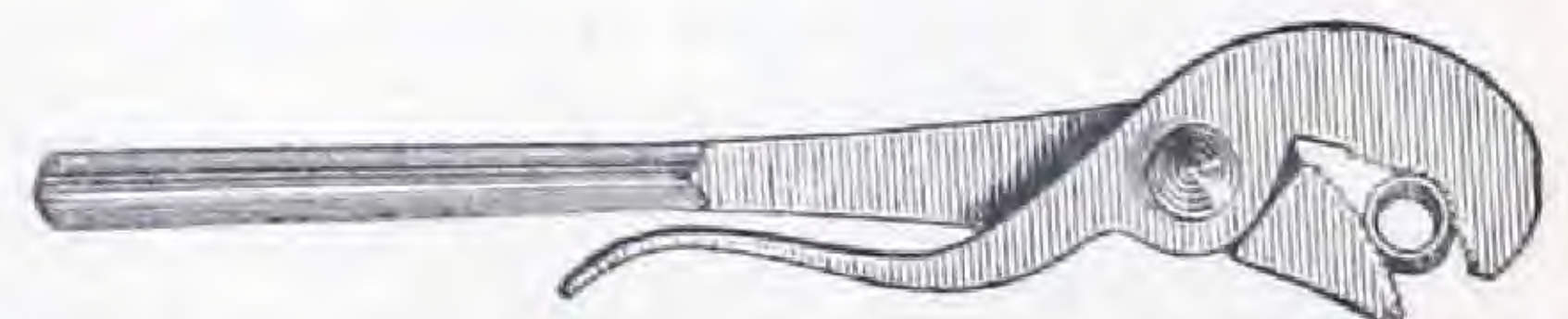
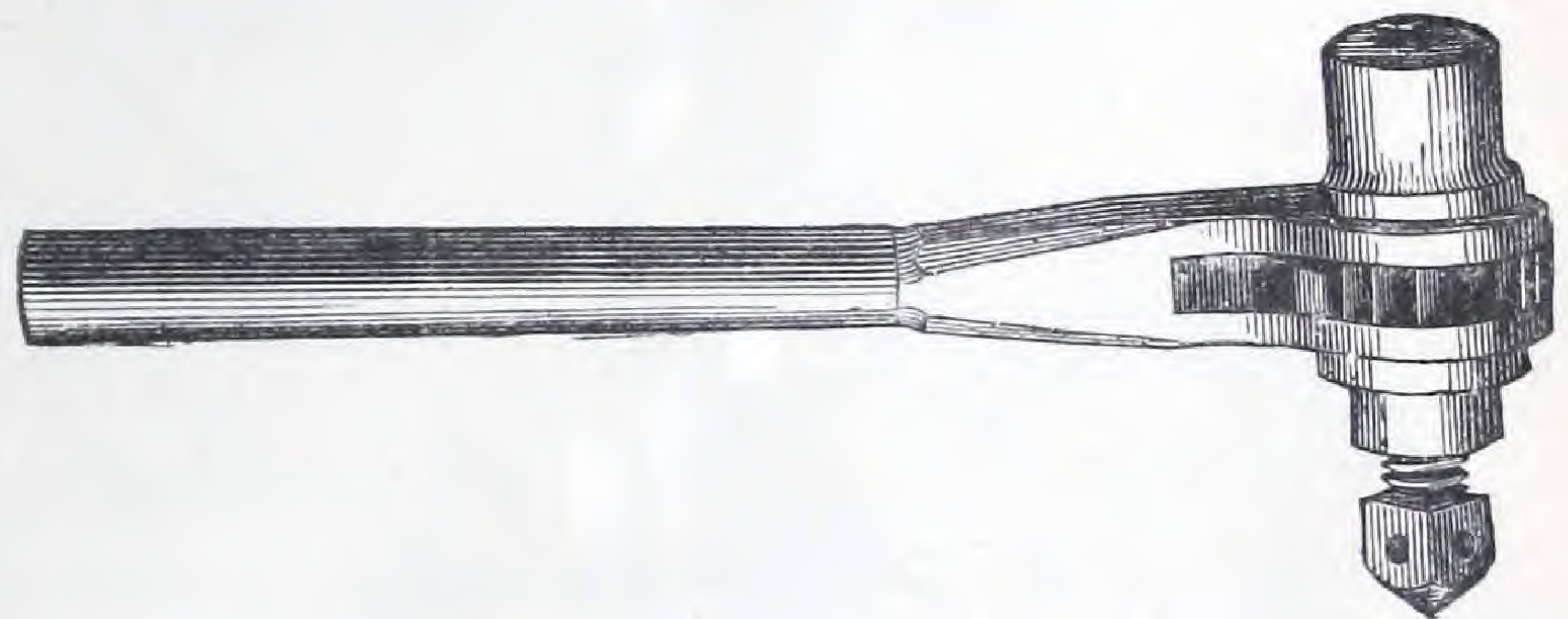
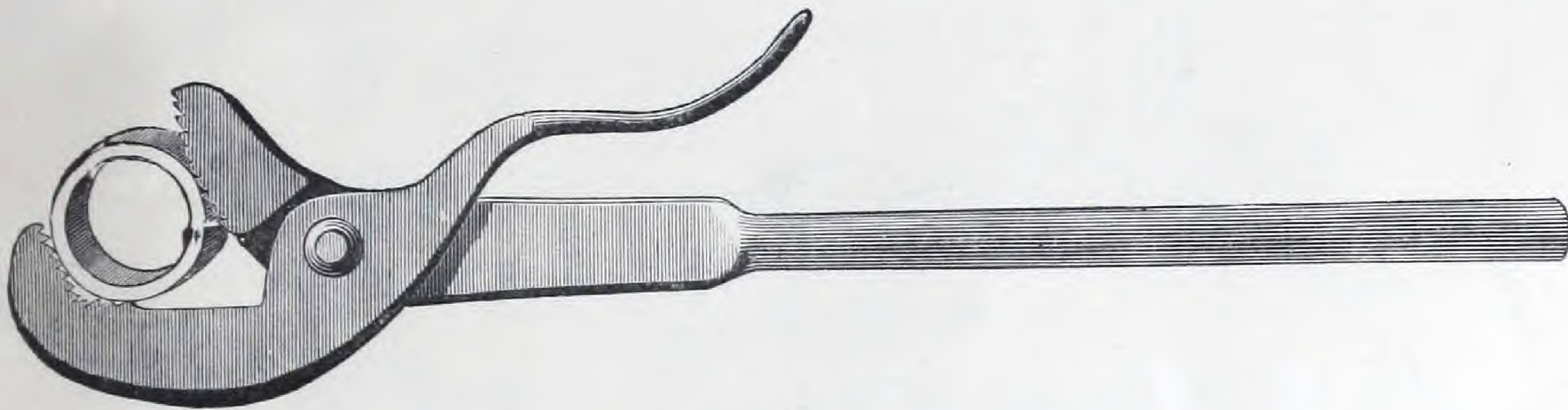
CLASS THIRD.—*Continued.*

BARWICK PATENT WRENCH

AND

PIPE TONGS

Are adapted to any shaped object, round, square, flat or oval; for instance, in tightening a bolt they will grip either the nut, head or shank. They will twist off a piece of pipe and not alter its diameter.



THE PACKER RATCHET DRILLS, &c.

The Packer Ratchets sold by us, are forged from the Best Norway Iron, with Steel Pall and Gear, and are the original and genuine Ratchets that have been before the public for so many years, and which have given such entire satisfaction. They have been adopted by the UNITED STATES GOVERNMENT; and are in use in Navy Yards, and on board Steamships; also, in all the principal Machine Shops in the United States and Canadas.

CLASS THIRD.—*Continued.*

The BARWICK PATENT WRENCH and PIPE TONGS combined, are now acknowledged to be the best wrench and most useful tool upon the market for all purposes. It is Pipe Tongs, Screw Wrench and Coupling Plyers, all in one Tool, and will do work that a Common Tongs, Screw Wrench and Coupling Plyers will not. This Wrench will not crush a pipe or change its diameter, several tests have been made, and in no one instance has the Common or Adjustable Tongs ever stood the test against them.

They are always ready for their work without altering or changing any of the parts, any more than you alter your hand in opening and shutting it on a large or small object, a useful and compact tool for any Machinist's bench; no wrench so handy about an Engine, Printing Press, Factory, Railroads, Oil Wells, Horse Railroads, Wagons and Carriages, Sailing Vessels or Steamers. In fact, every place where nuts, bolts or piping is used, it is invaluable.

Annexed are the sizes of Pipe, Bolts and Nuts, that are adapted to the different numbers of the Barwick Wrench.

PRICE LIST.

[illegible]

PACKER RATCHET.

No. 1. 10 inch Handles,	.	.	.	.	.	.	.	\$10.50	No. 4. 17 inch Handles,	.	.	.	.	.	.	.	\$19.00
" 2. 12 "	.	.	.	.	.	.	.	13.50	" 5. 20 "	.	.	.	.	.	.	.	23.00
" 3. 15 "	16.00									

BOILER RATCHETS.

No. 1. 10 inch Handles,	\$9.00		No. 2. 12 inch Handles,	\$10.50
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AUGER RATCHETS.

[illegible]

The following table shows the advantage of the BARWICK PIPE WRENCH over the Common Tongs, as regards the weight to carry to do the same work, in addition every purchaser has the advantage and use, over any Adjustable Pipe Tongs, of a most powerful Wrench, that will start a nut or bolt, when all others fail, free of any extra charge or cost.

No. 1 WRENCH is four pairs Common Tongs, Screw Wrench and Coupling Plyers, all in one Tool, and will do work that the Common Tongs, Screw Wrench, and Plyers will not.

No. 2 is 6 pairs Common Tongs and a Screw Wrench.

	WEIGHT.
$\frac{3}{4}$ inch Tongs,	4 lbs.
$\frac{1}{2}$ " "	3 "
$\frac{3}{8}$ " "	2 $\frac{1}{2}$ "
$\frac{1}{4}$ " "	2 "
Screw Wrench,	2 "
Steel Pliers,	1 "
	<hr/> 14 $\frac{1}{2}$ lbs.
	2 "
	<hr/> 12 $\frac{1}{2}$ " weight [less to carry.

	WEIGHT.
1½ inch Tongs,	8 lbs.
1 " 	5¾ "
¾ " 	4 "
½ " 	3 "
⅜ " 	2½ "
¼ " 	2 "
Screw Wrench,	3 "
	<hr/>
	28½ lbs.
	5 "
	<hr/>
	23½ lbs. weight
	[less to carry.]

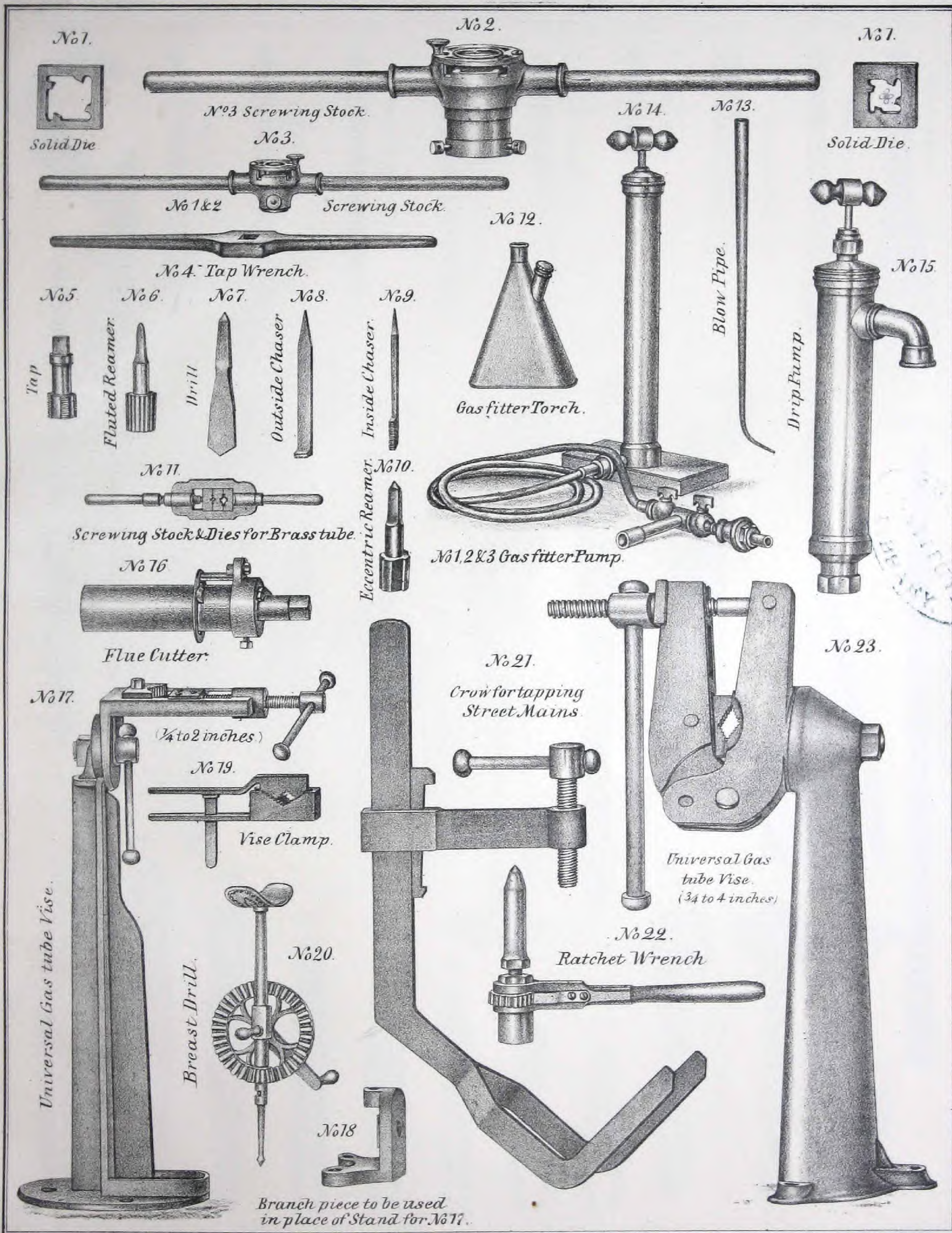
OTHER SIZES THE SAME IN PROPORTION.

MORRIS, TASKER & CO'S ILLUSTRATED CATALOGUE.

10th EDITION

CLASS THIRD.

Plate 1.

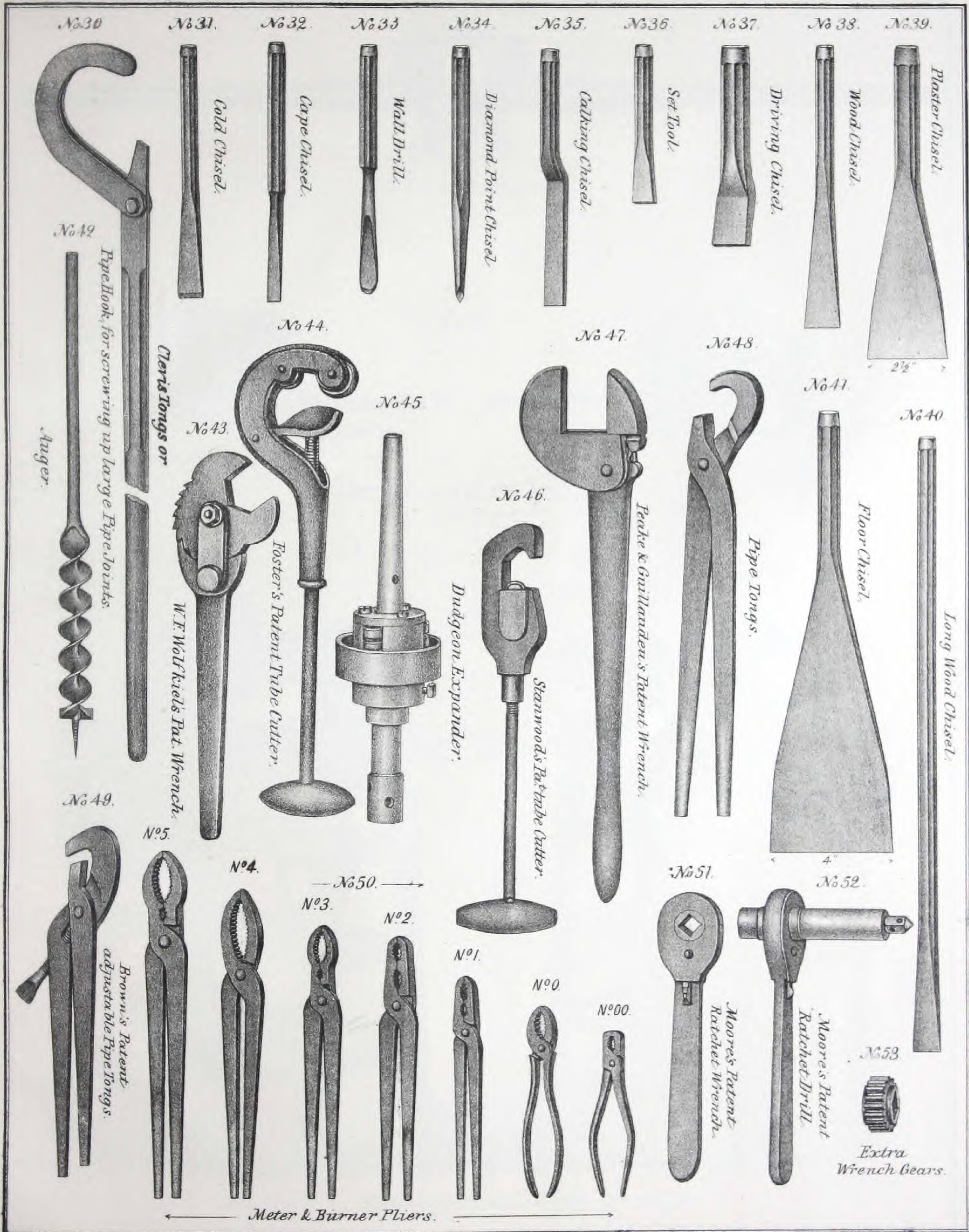


MORRIS, TASKER & CO'S ILLUSTRATED CATALOGUE.

10th EDITION

CLASS THIRD.

Plate 2.



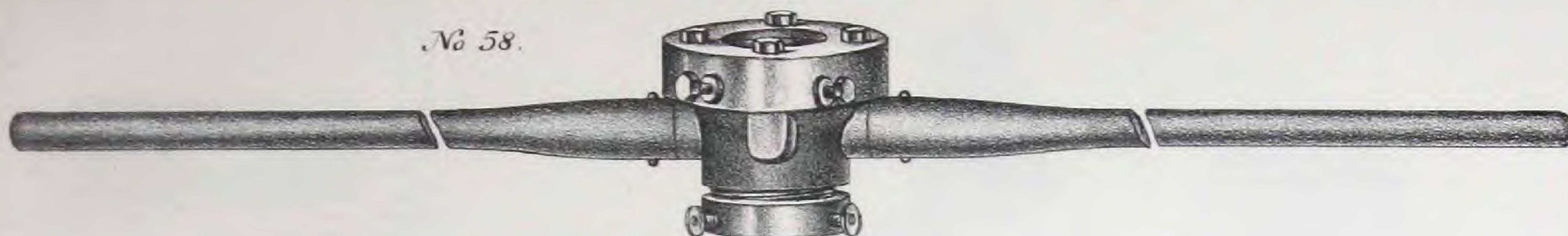
MORRIS, TASKER & CO'S ILLUSTRATED CATALOGUE.

10th EDITION

CLASS THIRD.

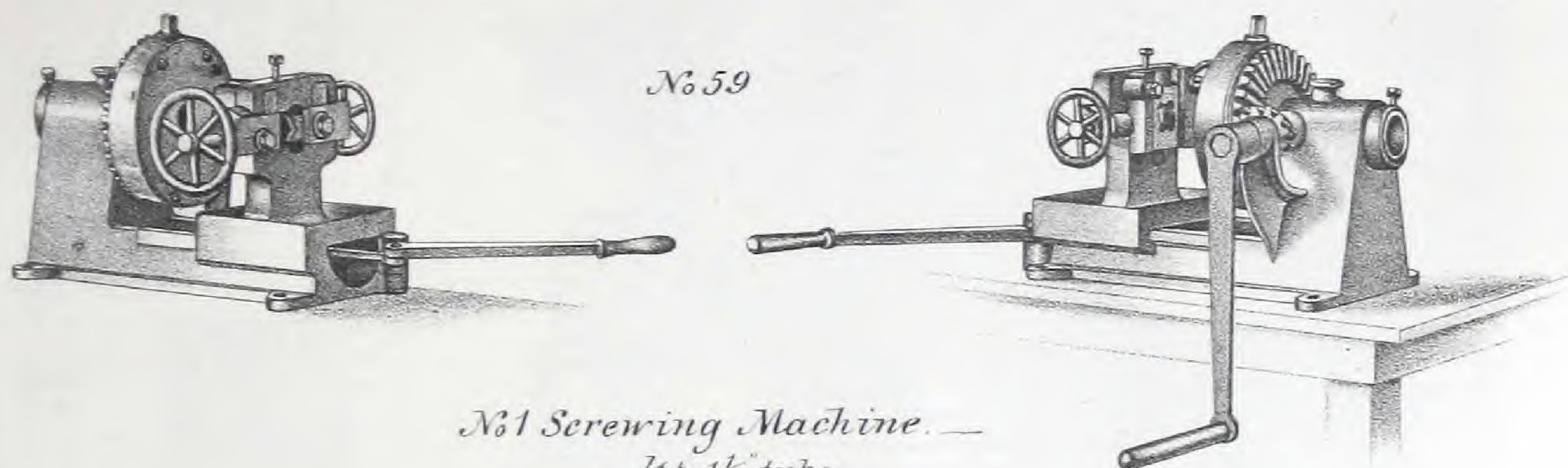
Plate 3.

No 58.



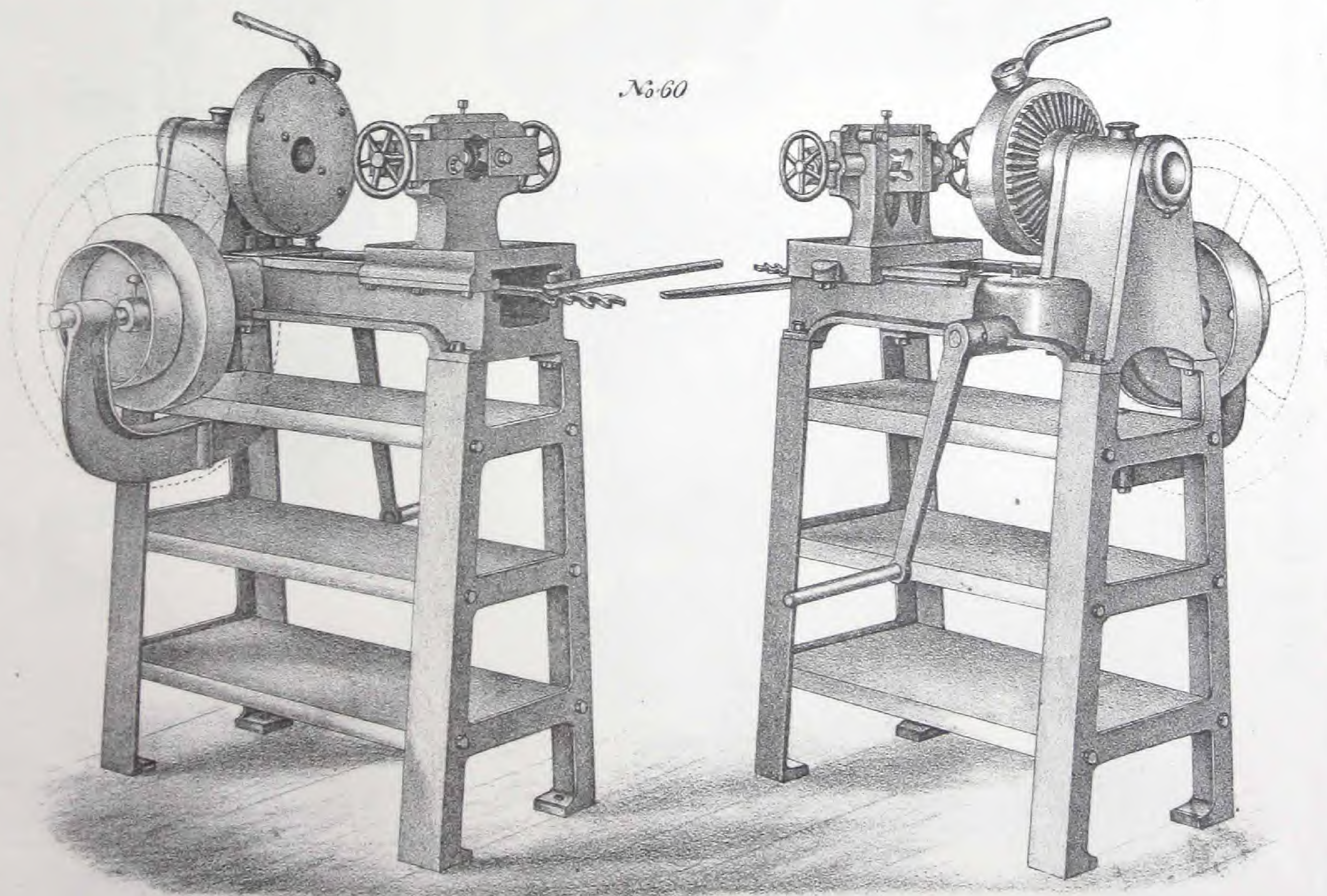
No IV & V Screwing Stock.

No 59



No 1 Screwing Machine. —
1/4 to 1 1/4" tube.

No 60



No 2 Screwing Machine for Power or hand. — 1/4 to 2" tube.

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CCA

MORRIS, TASKER & CO'S ILLUSTRATED CATALOGUE.

10th EDITION

CLASS THIRD.

Plate 4.

No 71.



Solid Dies holder for No 3 improved Screwing Mach.

No 69.



Guide for head No 1 & 2 Mach.

No 68.



Bushing for Spindle No 1 & 2 Mach.

No 67.



Reducing piece to hold 2 square Dies.

No 66.



Reducing piece to hold 2 square Dies.

No 65.



Internal Chuck for gripping tubes No 3 impr. Mach.

No 64.



Die with Cutters for No 3 improved Machine.

No 70.



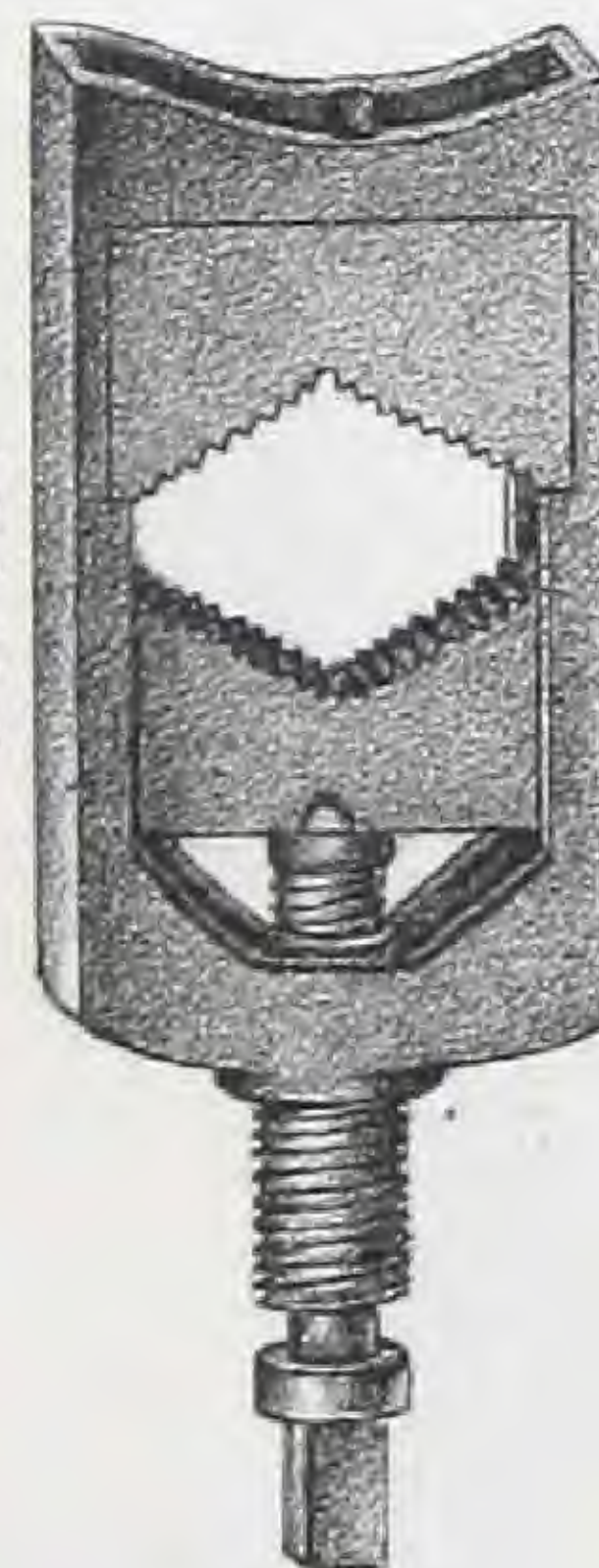
Guide for cutting head for No 3 impr. Mach.

No 73.



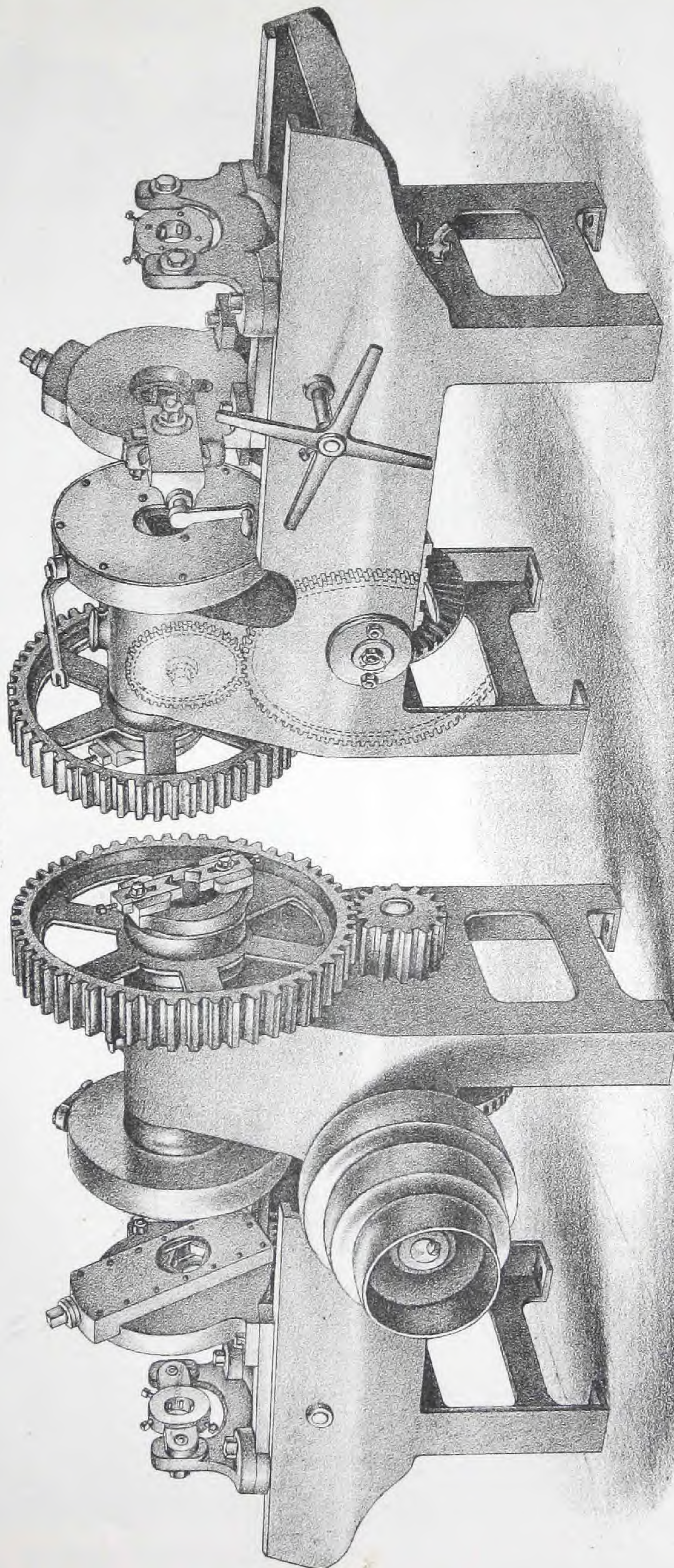
Internal Chuck for gripping tubes No 1 & 2 Mach.

No 72.



Internal Chuck for gripping tubes No 3 impr. Mach.

No 63.



No. 3 Screwing Machine, for Power or Hand, $\frac{3}{8}$ to 4 inch Tube.
(IMPROVED.)

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MORRIS, TASKER & CO'S ILLUSTRATED CATALOGUE

10th EDITION

CLASS THIRD.

Plate 5

No 7.

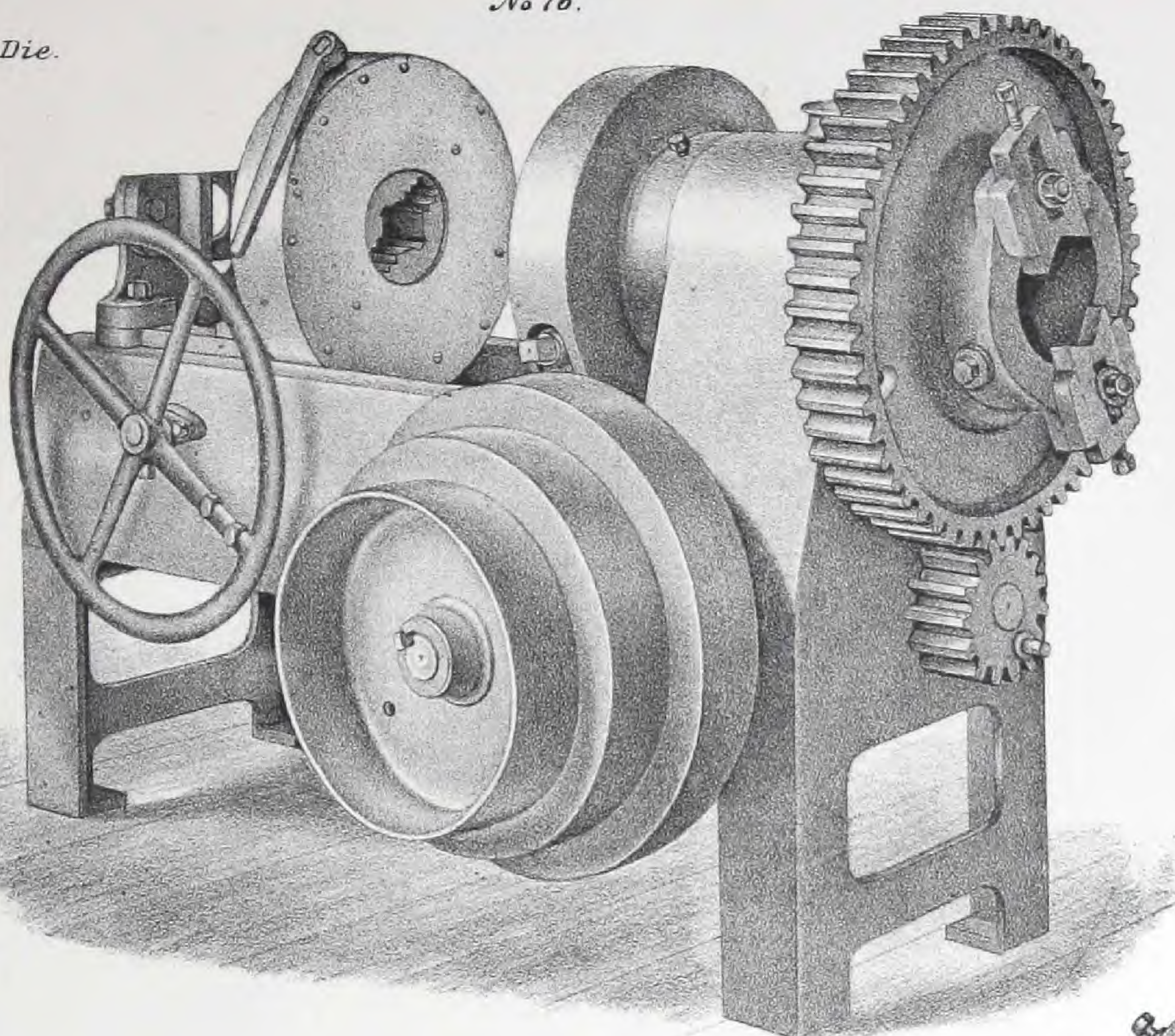


Solid Die.

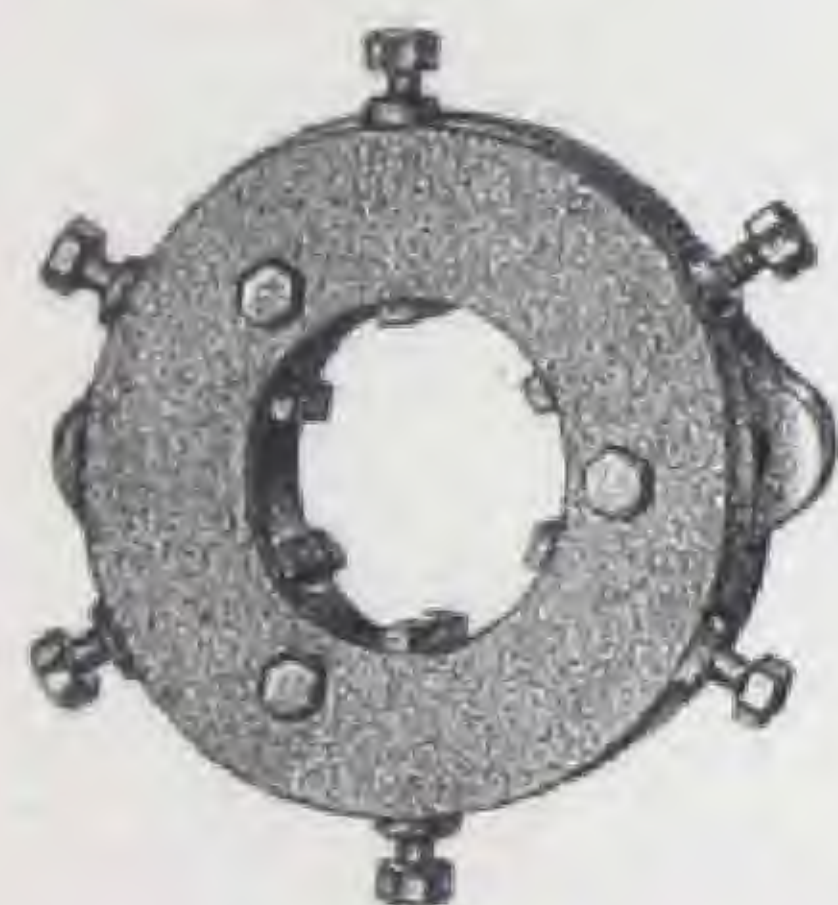


*Solid Die Holder
for No 4 Machine.*

No 76.

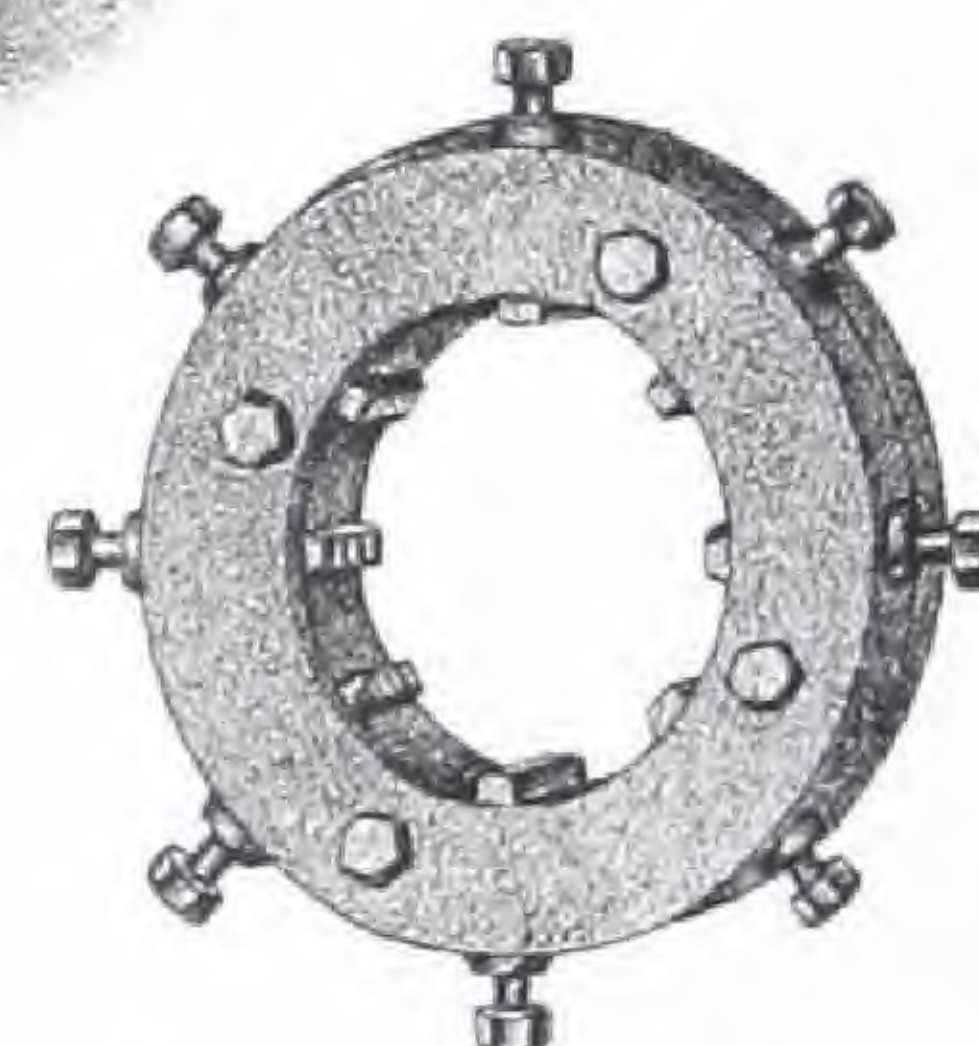


No 78.

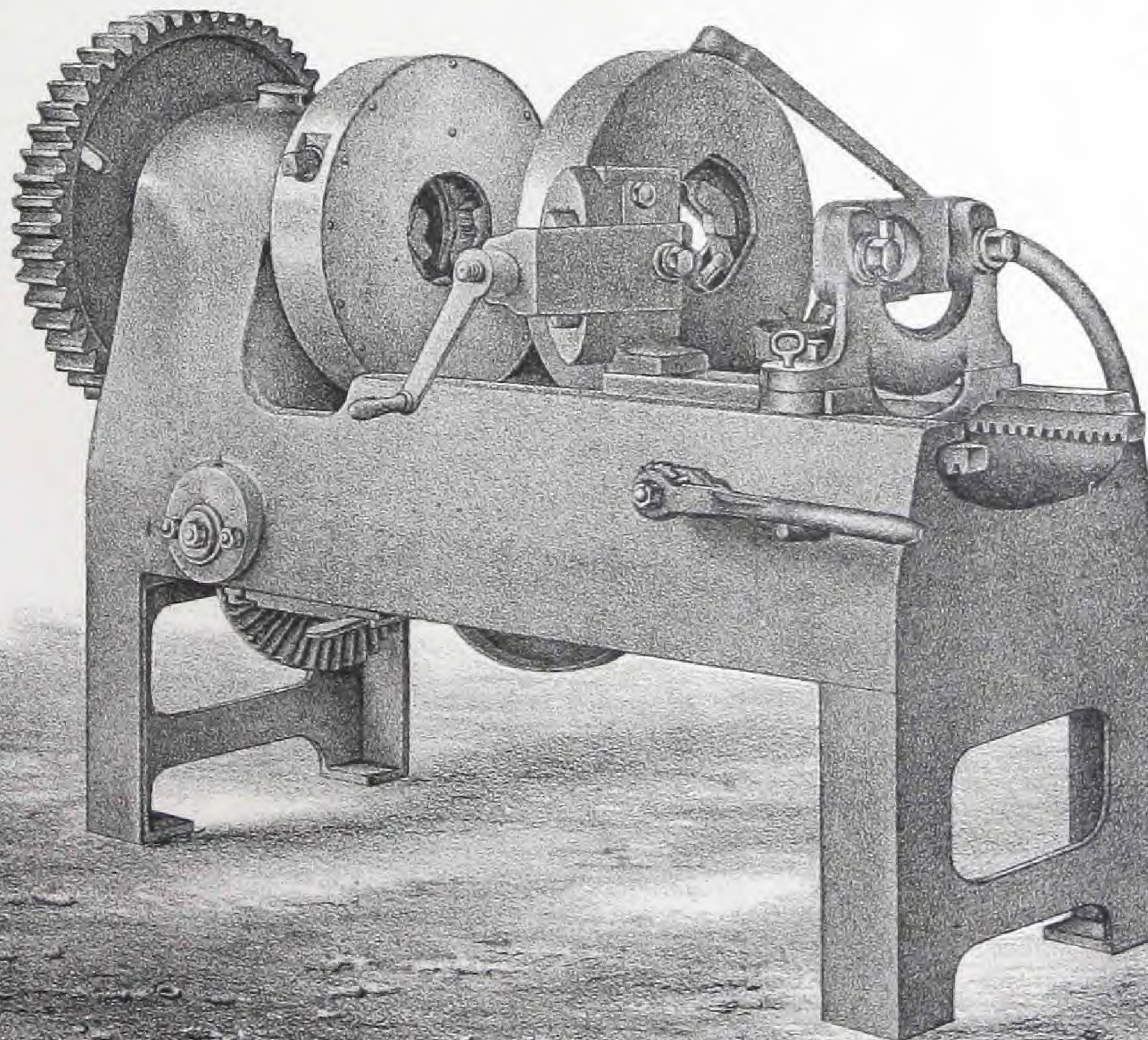


*Die with Cutters
for No 4 Machine
2½, 3, 3½ & 4 inch*

No 79.



*Die with Cutters
for No 4 Machine
4½, 5 & 6 inch.*



No 4 Screwing Machine, 1 inch to 6 inch tube.

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CCA

CLASS FOURTH.

PLUMBER'S MATERIALS.

[illegible]

30	Round Bottom Drain Trap, top 14×14×12 inches deep; grate 13 inches square, for 3, 4 or 6 inch drain pipe,	\$5 40
----	---	--------

	DIAMETER OF TUBE IN INCHES,	$\frac{3}{4}$	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	2	2 $\frac{1}{2}$
31	Bell Trap, Nozzle Screwed for Tube Thread, or plain, .	\$0.40	\$0.50	\$0.65	\$0.90	\$1.40	\$2.00

	DIAMETER IN INCHES,	2 in.	3 in.	4 in.	5 in.	6 in.	7 in.	8 in.	10 in.	12 in.
	Length over all, each piece,	5 feet.	5 feet.	5 feet.	5 feet.	6 feet.	6 feet.	6 ft. 2 in.	6 feet.	6 feet.
32	Conductor Trap,			\$7.00						

33	Yard Trap, top $20\frac{1}{2} \times 13\frac{1}{2} \times 13\frac{1}{2}$ inches deep; grate 7 inches square, for 3, 4 or 5 inch drain pipe,	\$10 25
33	" " $26\frac{1}{2} \times 16\frac{1}{2} \times 16\frac{1}{2}$ " " 9 " " 6 or 8 " "	15 25

	DIAMETER IN INCHES,	2 in.	3 in.	4 in.	5 in.	6 in.	7 in.	8 in.	10 in.	12 in.
	Length over all, each piece,	5 feet.	5 feet.	5 feet.	5 feet.	6 feet.	6 feet.	6 ft. 2 in.	6 feet.	6 feet.
34	Bell Trap,	\$1.40	\$2.00	\$3.00	\$4.60	\$7.00	\$10.40	\$15.00	. .	. .

PLATE			
38	2	Tasker's Patent Hydrant and Case,	\$10 00

No. PLATE
2

							Plain.	Painted.	Galvanized.	Enameled.
							\$ c.	\$ c.	\$ c.	\$ c.
39	Basin	Washstands,	with feet,	with brass plug and waste,	.	.	6.50	7.50	9.00	11.25
39	"	"	"	fitted with one cock and pedestal, plug and waste, complete,	.	.	8.85	9.85	11.35	14.00
39	"	"	"	two cocks and pedestals,	"	"	11.15	12.15	13.65	16.70
40	"	"	with pedestal,	"	brass plug and waste, and soap dish,	.	8.00	9.00	11.00	13.25
40	"	"	"	"	one cock and pedestal, plug, waste, and soap dish, complete,	.	10.35	11.35	13.35	16.00
40	"	"	"	"	two cocks and pedestals,	"	12.70	13.70	15.70	18.75
41	Double	"	with feet,	"	one cock and pedestal, two plugs and wastes, complete,	.	19.35	21.35	24.35	35.45
41	"	"	"	"	two cocks and pedestals,	"	21.70	23.70	26.70	38.40
41	"	"	"	"	four " " " "	.	26.40	28.40	31.40	44.30
41	"	"	"	"	two brass plugs and wastes,	.	17.00	19.00	22.00	32.50

		No. 1.				No. 2.				No. 3.			
		Long.	Wide.	Deep.	High over all.	Long.	Wide.	Deep.	High over all.	Long.	Wide.	Deep.	High over all.
42	Painted, Hidden Overflow and Plug, }	5 ft. 9½ in.	2 ft. 4 in.	1 ft. 7¼ in.	2 ft. 0 in.	2 ft. 8 in.	2 ft. 2 in.	1 ft. 6¾ in.	1 ft. 11 in.	5 ft. 4½ in.	2 ft. 0 in.	1 ft. 4⅞ in.	1 ft. 9½ in.
					\$23.00				\$22.00				\$21.00
42	Painted, with two angle valves, and Waste and Overflow Valve, and Strainer, for Hospital use, }				\$35.50				\$24.50				\$33.50
43	Plain Castings, Hidden Overflow and Plug, . . . }				\$21.60				\$20.70				\$19.80

44	Round Tank, diameter 2 feet 9½ inches by 1 foot 10 inches deep,	\$12.50
45	*Oblong Tank or Bosh, dimensions over all, 3 feet 5½ inches long by 1 foot 5¾ inches wide by 1 foot 7 inches deep,	40.00
46	Large Oval Tank, dimensions over all, 4 feet 11¾ inches long by 2 feet 2¼ inches wide by 2 feet 0½ inch deep,	42.00

With outlets for flange connections, these can be used for Green-House Hot Water Cisterns.

*This can be made any length shorter than here given, to order.

Showing how to use Drain Pipes, the Fittings in Buildings.

47	Pavement Pipe; diameter 4 in. X 2 ft. 9 in. long; top, 5 in. square,	\$2 00
48	Stop Cock Box, ornamental water or gas lid, 9½ inches square,	1 25
49	“ “ plain, “ “ 6 “ “	40
50	Gas Cock Box, 5 inches square,	30

Weight.	Dimensions.	Capacity.	Price, Plain.	Price, Galvanized.	Price, Vulcanized Rub'r-Coat'd.	Weight.	Dimensions.	Capacity.	Price, Plain.	Price, Galvanized.	Price, Vulcanized Rub'r-Coat'd.	Weight.	Dimensions.	Capacity.	Price, Plain.	Price, Galvanized.	Price, Vulcanized Rub'r-Coat'd.	Weight.	Dimensions.	Capacity.	Price, Plain.	Price, Galvanized.	Price, Vulcanized Rub'r-Coat'd.
Lbs.		Gals.	\$ c.	\$ c.	\$ c.	Lbs.		Gals.	\$ c.	\$ c.	\$ c.	Lbs.		Gals.	\$ c.	\$ c.	\$ c.	Lbs.		Gals.	\$ c.	\$ c.	\$ c.
110	4' x 12"	23.5	15.75	19.95	18.45	259	4' x 24"	94.	48.90	60.00	57.55	241	5' x 20"	82.	39.00	52.00	49.75	232	6' x 18"	79.	38.00	51.00	49.00
131	4' x 14"	32.	19.95	26.25	23.80	126	5' x 12"	29.4	18.00	24.15	22.60	305	5' x 24"	118.	52.00	70.00	67.25	279	6' x 20"	98.	48.00	61.50	59.00
144	4' x 16"	42.	24.15	32.60	30.50	139	5' x 14"	40.	23.10	30.45	28.45	148	6' x 12"	35.3	24.10	31.00	29.50	338	6' x 24"	141.	60.50	78.50	75.00
171	4' x 18"	53.	28.50	36.00	33.50	176	5' x 16"	52.	27.00	35.00	33.00	156	6' x 14"	48.	30.50	37.10	35.35	318	7' x 20"	113.	50.25	68.00	65.00
178	4' x 20"	65.	33.75	42.00	39.70	193	5' x 18"	66.	31.50	40.75	38.75	191	6' x 16"	63.	30.50	43.50	41.60	425	8' x 24"	188.	83.50	105.00	102.00

For Back Log Boilers, $\frac{3}{4}$ " lead pipe connections, consisting of two boiler ferrules, and a piece of $\frac{3}{4}$ " galvanized tube 6 inches shorter than the boiler,	\$2.00
For Circulating Boilers, $\frac{3}{4}$ " lead pipe connections, two goose-neck unions, and two straight boiler unions, and a piece of $\frac{3}{4}$ " galvanized tube 6 inches shorter than the boiler,	3.00
To guard against the possibility of accidents our Boilers are made of the best charcoal iron. They weigh more than any other Boilers in the market, and are all proved by a cold water pressure of 80 lbs. per square inch.	

CLASS FOURTH.—*Continued.*

BATH BOILER CONNECTIONS, EXTRA.

For Back Log Boilers, $\frac{3}{4}$ inch lead pipe connections, consisting of two boiler ferrules, and a piece of $\frac{3}{4}$ inch galvanized tube, 6 inches shorter than the boiler,	\$2 00
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For Circulating Boilers, $\frac{3}{4}$ inch lead pipe connections, two goose-neck unions, and two straight boiler unions, and a piece of $\frac{3}{4}$ inch galvanized tube, 6 inches shorter than the boiler,	5 00
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52 Tubular Stand for Upright Bath Boilers; this consists of four corner fittings joined by $\frac{3}{8}$ inch tubes, and supported by $\frac{3}{4}$ inch tube legs, with 3 inch by $\frac{3}{4}$ inch flanges, sold separately on Class First, or if made up as below:

Diameter of Boiler,	10, 12, and 14 inch.	16, 18, and 20 inch.	24 inch.
Height from floor, 1 ft. 6 in.	\$2.50	\$2.60	\$2.75
" " 2 ft. 0 in.	2.75	2.85	3.00
" " 2 ft. 6 in.	3.00	3.10	3.25

Bath Boilers of larger or smaller sizes made to order.

53	Hot-water Backs, tapped for connections,	14×8×3½ inches. \$3.00	16½×11×4½ inches. \$6.50	19×11×4½ inches. \$8.00	24½×13×4½ inches. \$11.00
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Ferrules or Unions, extra.

PLATE										4×4 inches.	6×4 inches.
3	Single Soil Branch,	with hand hole (hand hole stopped off, if ordered,,	Price,	\$4.00	\$5.50
	Double " "	holes, " " "	Price,	.	.	.	.	.	.	6.00	8.00

		Plain.	Painted.	Enameled.
58	Slop Hopper and Lid, (same as 59 below the lid,)	\$5.25	\$6.00	\$8.00
59	Oval Hopper, 14×10 inches top, 3 inches neck, or 2½ inches neck,	2.50	2.85	4.50
60	“ with wooden rim, 14×10 inches top, 3 inches neck, or 2½ inches neck,	2.50	4.00	6.00
61	Corner Urinal to fit branch pipe, or square corner, as ordered, (11 inch side,)	1.75	2.00	3.00
62	Half Round Urinal, (15 inches back ; 7 inches projection,)	1.25	1.50	2.25
63	Circular Hopper, with flange, 14 inches diameter, by 16 inches above feet, 4 inch pipe,	2.65	3.00	4.65
64	“ “ “ feet, 14 “ “ 16 “ “ 4 “	3.25	3.60	5.25

65	Stable Trap, box pattern; grate 9×9 inches; body 20½×10×8 inches; 4 or 6 inches outlet,	\$11 50
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66	deep pattern; grate $3\frac{1}{2} \times 3\frac{1}{2} \times 4$ inches deep; this has a dished flange on top 14×14 inches square,	7 00
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[illegible]

68	Drain Grate,	2	50
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69	{ Spring Valve for Hospital Water Closets, }	9 75
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69	{ Pulleys for No. 69,	\$ 75
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4×4 inches. 6×4 inches. 8×4 inches.


70	Heavy Double Soil Branch, for Hospitals, with two brass hand holes,	Price,	. . .	\$13.00	\$15.25	\$18.50
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71	"	Single	"	"	with brass hand hole,	Price,	.	.	.	9.00	11.00	14.00
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	3 inches.	4 inches.	6 inches.	8 inches.
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4	1	1	1	1
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94	1	1	1	1

72	Heavy Belly Trap,		\$2.80	\$4.50	\$15.50	\$20.25
73			2.80		15.50	20.25


72	"	"	with hand hole,	"	"	"	"	"	"	4.00	6.00	17.50	23.00
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SINKS.		Dimensions.	Without traps, Plain outlet, or none, if or- dered, Plain Castings.	With Trap and Collar for lead pipe, or tapped for Galvanized Tube.		
				Plain Castings.	Galvanized.	Enameled.
PLATE			\$ c.	\$ c.	\$ c.	\$ c.
75	4	Evaporator, round corners, 3 inches radius.				
						
		Inches—24½ long, 15¾ wide, 4½ deep,	1.90	2.50	3.25	6.75
		" 41½ " 15¾ " 4¼ "	3.70	4.30	5.75	16.75
		" 53½ " 15¾ " 4¼ "	4.20	4.80	6.50	18.00

76	Corner Slop Sink, or Manger Box, to fit post or pipe.		$\left\{ \begin{array}{l} 21\frac{1}{2} \text{ inches radius, } \times 8\frac{1}{4} \text{ in. deep, with 6 inches corner out,} \\ 24 \quad " \quad " \quad 7\frac{1}{4} \quad " \quad \text{with } 6\frac{1}{2} \quad " \quad " \end{array} \right.$	Plain. \$3.40 3.40	Painted. \$3.90 3.90	Galvanized. \$5.65 5.65	Enamelled. \$11.40 11.40
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77	SINKS.	Dimensions.	Without traps, Plain outlet, or none, if or- dered, Plain Castings.	With Trap and Collar for lead pipe, or tapped for Galvanized Tube.		
				Plain Castings.	Galvanized.	Enameled.
	Round corner Sinks, two round corners, corners 6 inches ra- dius, flange $\frac{3}{4}$ inch wide.	} Inches—20 $\frac{1}{4}$ long, 16 $\frac{1}{2}$ wide, 4 deep,	\$1.60	\$2.20	\$2.85	\$6.40


CLASS FOURTH.—*Continued.*

No.	PLATE.				Plain.	Painted.	Galvanized.	Enameled.
78	4	Corner Slop Sink, or Manger Box,		16½ inches radius, X 8 in. deep,	\$2.80	\$3.30	\$4.45	\$10.80
				16¼ " " 10¼ " " " " " "	3.10	3.60	5.00	11.10
				17 " " 12¼ " " " " " "	3.40	3.90	5.65	11.40
				21½ " " 8½ " " " " " "	3.10	3.60	5.00	11.10

		SINKS.	Dimensions.		Without traps, Plain outlet, or none, if or- dered, Plain Castings.	With Trap and Collar for lead pipe, or tapped with Galvanized Tube.		
						Plain Castings.	Galvanized.	Enameled.
					\$ c.	\$ c.	\$ c.	\$ c.
79	Square corner Sinks.	Inches—23 $\frac{3}{4}$ long, 15 $\frac{1}{2}$ wide, 5 deep,	.	.	.	.	.	.
		" 29 $\frac{3}{4}$ " 17 $\frac{1}{2}$ " 5 $\frac{3}{4}$ "	.	.	.	.	.	.
		" 31 $\frac{1}{4}$ " 20 $\frac{1}{4}$ " 5 $\frac{3}{4}$ "	.	.	.	.	.	.
		" 37 " 20 $\frac{1}{4}$ " 5 $\frac{3}{4}$ "	.	.	.	.	.	.
		" 56 $\frac{3}{4}$ " 24 " 6 "	.	.	.	.	.	.
		" 46 $\frac{1}{4}$ " 19 $\frac{1}{4}$ " 4 $\frac{3}{4}$ "	.	.	.	.	.	.
		" 72 " 22 $\frac{1}{4}$ " 6 " (for tube legs.)	.	.	.	.	.	.
80	Round corner Sinks, two round corners, corners 6 inches radius, flange $\frac{3}{4}$ inch wide.	" 23 $\frac{1}{2}$ " 17 $\frac{1}{2}$ " 5 $\frac{1}{4}$ "	.	.	.	.	.	.

		Plain.	Painted.	Galvanized.	Enameled.
81	Basin Sink, with brass plug and waste,	\$4.75	\$5.35	\$6.15	\$9.10
82	Double Basin Sink, with two brass plugs and wastes,	13.25	14.50	18.25	20.00

SINKS.		Dimensions.		Without traps, Plain outlet, or none, if or- dered, Plain Castings.	With Trap and Collar for lead pipe, or tapped with Galvanized Tube.		
				Plain Castings.	Galvanized.	Enameled.	
83	Round corner Sinks, two round corners, corners 6 inches radius, flange $\frac{3}{4}$ inch wide.	Inches—26 long,	17 $\frac{1}{2}$ wide, 5 $\frac{1}{4}$ deep, (corners 2 in. radius.)	\$ c.	\$ c.	\$ c.	\$ c.
		" 28 $\frac{1}{4}$	" 19 $\frac{1}{2}$ " 5 $\frac{1}{4}$ "	3.50	4.10	5.50	9.80
		" 33 $\frac{1}{4}$	" 21 $\frac{1}{2}$ " 5 $\frac{1}{2}$ "	3.90	4.65	6.20	11.40
		" 35 $\frac{1}{4}$	" 21 $\frac{1}{2}$ " 7 $\frac{1}{4}$ "	4.90	5.65	7.60	15.40
		" 41 $\frac{1}{2}$	" 21 " 5 $\frac{1}{2}$ "	5.90	6.65	9.50	17.90
		" 43	" 21 $\frac{1}{2}$ " 5 $\frac{3}{4}$ "	8.00	8.75	12.00	18.50
		" 22 $\frac{3}{4}$	" 18 " 4 " (flange $\frac{1}{2}$ in.)	7.10	5.85	7.90	15.60
	Same, square cornered top.	" 24 $\frac{1}{2}$	" 17 $\frac{1}{2}$ " 3 $\frac{3}{4}$ " (" 1 $\frac{1}{4}$ in.)	2.00	2.75	3.50	7.25
		" 52	" 26 " 7 " (corner 8 in. radius, flange $\frac{3}{4}$ in.)	2.90	3.50	4.65	9.25
		" 85	" 30 $\frac{1}{4}$ " 10 $\frac{1}{4}$ " " 4 in. " " "	17.25	18.00	27.20	32.25
				36.60	37.35	56.85	. .

		Plain.	Painted.	Galvanized.	Enameled.
84	Oval Wash Basin, 13 inches \times 10 $\frac{1}{2}$ in. \times 4 $\frac{1}{2}$ in. deep inside, 1 $\frac{1}{2}$ inch flange, with plug and chain, .	\$1.75	\$2.05	. .	\$3.55
85	Round Wash Basin, back overflow, 12 inches diameter, \times 5 inches deep inside, $\frac{3}{4}$ inch flange, .	1.75	2.05	. .	3.40
85	" " " 14 inches diameter, 6 inches deep, $\frac{3}{4}$ inch flange, . . .	2.50	2.80	. .	4.30
86	Square Slop Sink, or {  } 19 $\frac{1}{2}$ \times 19 $\frac{1}{2}$ \times 10 $\frac{1}{2}$ inches,	3.75	4.25	\$6.45	11.75
	Manger Box, slop-front,				
	Bell Trap, attached to Slop Sink, for 1 inch lead pipe connections, extra, . . . . .	.65	.75	.90	1.25

87	Round corner Sink, with overflow, extra price.
<hr/>	
88	Military Hospital Water Closets, 16 in. wide by 16 in. deep, 6 ft. 7 ft. 8 ft. 9 ft. 10 ft. 12 ft. long, (all inside dimensions, flange 1½ in. wide. Price, \$21.80 \$25.00 \$28.00 \$31.25 \$34.35 \$40.60 Add for Overflow Plug, Lever, and Drain Pipe, either straight or bend, (1 foot 9 inches long,) \$7 50 Add for Clapper Valve and Drain Pipe, either straight or bend, " " 5 60

CLASS FOURTH.—*Continued.*

VIEWS OF WATER CLOSET ARRANGEMENTS.

Showing how to use Drain Pipes, the Fittings in Buildings.

No.	PLATE.		
	6		
90		Side-walk Gutter, half octagon, cover loose, diamond; whole lengths, 8 feet and 6 feet; price per foot,	\$1 20
91		Branch for No. 90; price each,	1 50
92		Bend for No. 90; "	1 20
93		Side-walk Gutters, London pattern, cover attached, diamond, with cleaning slit; whole length, 6 feet each, price per foot,	1 25
94		Branch for No. 93; price each,	1 50
95		Bend for No. 93; "	1 25
96		Side-walk Gutter, half round pattern, cover loose, reeded; whole lengths, 6 feet each; price per foot,	1 00
97		Branch for No. 96; price each,	1 20
98		Bend for No. 96; "	75
99		Side-walk Gutter, square, cover loose, fluted; whole lengths, 6 feet; price per foot,	1 00
100		Return End for No. 99: price each,	2 50
101		Bend for No. 99; "	80
102		Branch for No. 99; "	1 25
103		Eaves Gutter, half round, 7 inches diameter, (spout outlets put on as ordered, price extra,) laying length 5 feet; price per foot,	1 00
103		" " 10 " " " " " " " " 5 " "	1 75
104		Hip Corner for No. 103; price each,	2 50
105		Corner for 103; price each,	2 50
108		Vault Ring and Cover, (oval,) 2 ft. 6 in. \times 1 ft. 9 in.,	
109		Sewer Inlet, plate, 5 ft. 8 in. long \times 2 ft. 8 in. wide,	
110		Vault Frame and Cover, (square or oblong,) to order,	

	DIAMETER OF COVER OR GRATE,	1 ft. 1 in.	1 ft. 5 in.	1 ft. 6 in.	1 ft. 8 in.
		\$ c.	\$ c.	\$ c.	\$ c.
111	Vault Rings, (circular),	1.00	1.25	2.00	2.50
111	Vault Covers,	1.25	1.75	2.25	2.90
111	Vault Grates,	1.50	1.75	2.40	3.30

113	Box Scraper,	\$0 90
114	Scraper,	45
115	Scraper,	70

	INTERNAL DIAMETER,	3 inches.	3½ inches.	4 inches.	4½ inches.
116	Spout Case with offsets, with or without nozzle, as ordered; price each,				
117	" " nozzle, 6 feet length; price each,	\$4.50	\$5.25	\$6.25	\$7.25
118	" " " 3 feet 6 inches lengths; price each,	2.75	3.25	3.80	4.35

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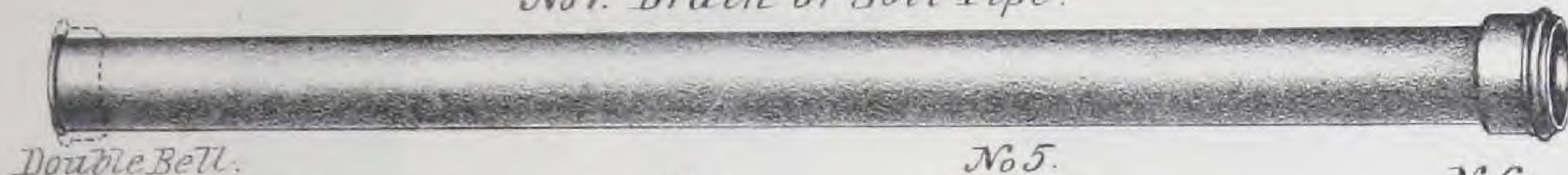
MORRIS, TASKER & CO'S ILLUSTRATED CATALOGUE.

10th EDITION

CLASS FOURTH.

Plate 1.

No 1. Drain or Soil Pipe.

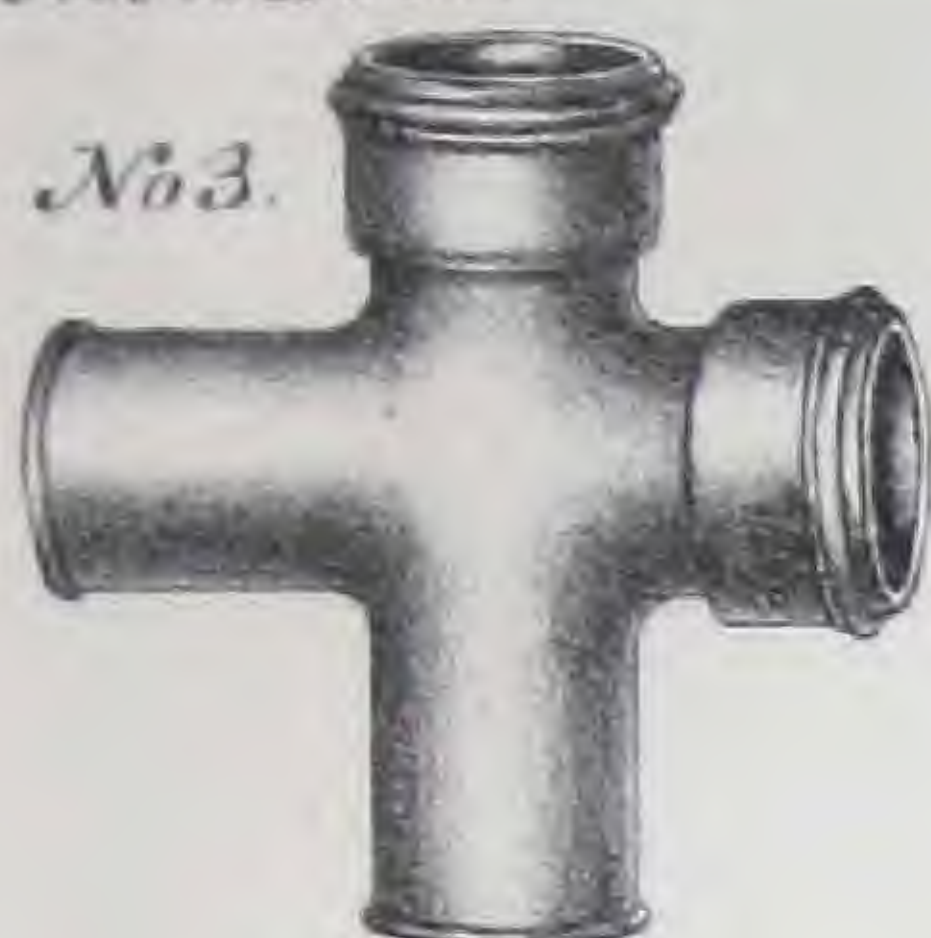


Double Bell.



No 2.

Double hub.



No 3.

Cross.

No 4.



Ell or quarter bend.

No 5.

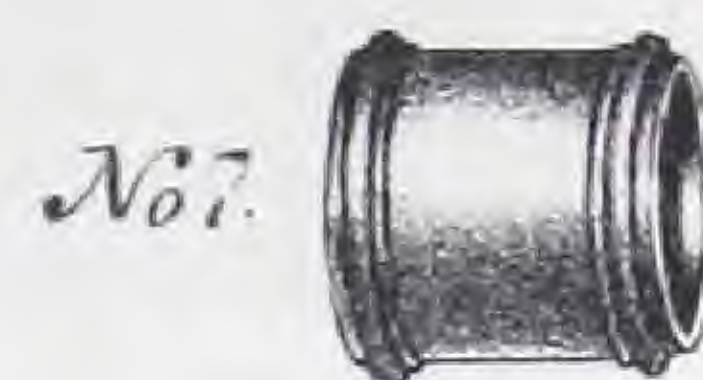


Tee.

No 6.



Eighth Bend.



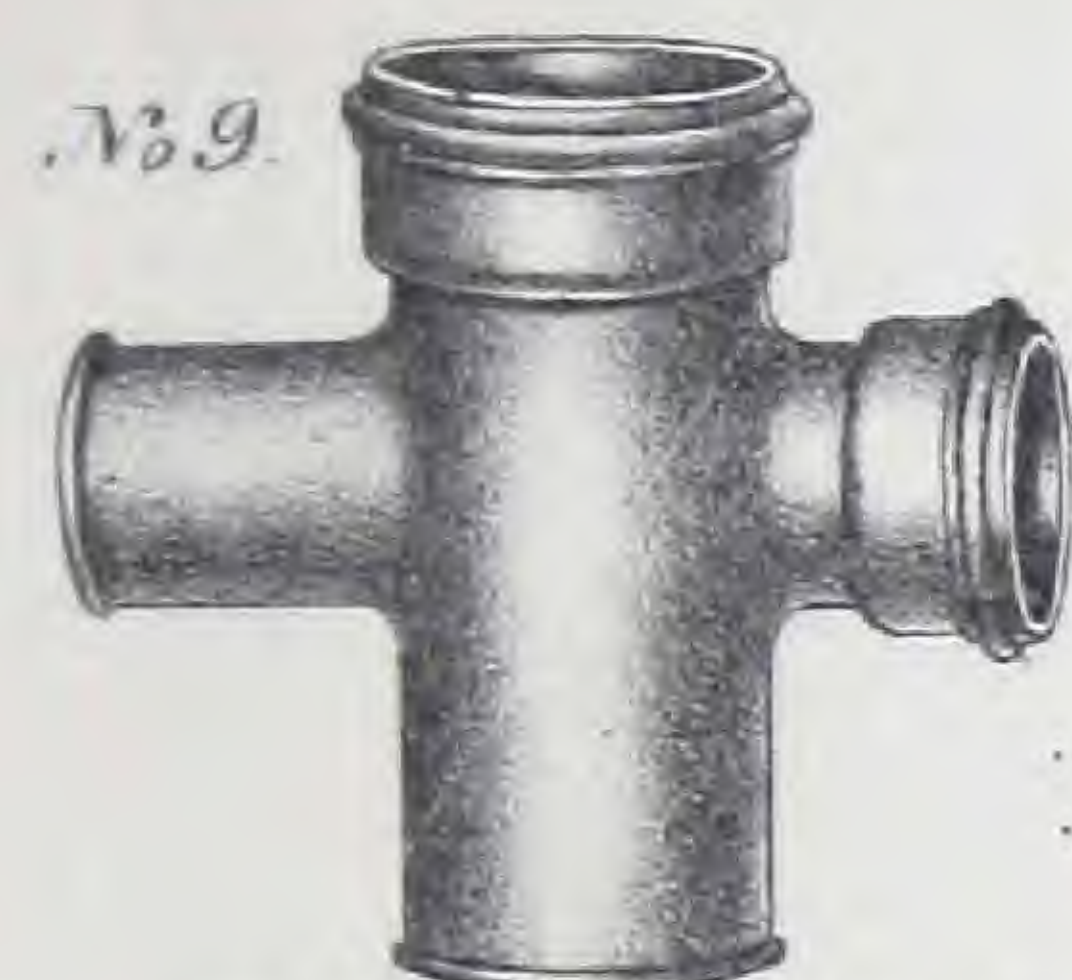
No 7.

Sleeve.



No 8.

Reducer, double hub.



No 9.

Reducing Cross.



No 10.

Double Y Branch.



No 11.

Reducing Tee.



No 12. Branch or Y.



No 13.

Offset Bend.



No 14.

S Trap.



No 15.

Red. double Y Branch.



No 16.

P Trap.



No 17. Red. Branch or Y.



No 18.

Return Bend.



No 19.

Running or Belly Trap.



No 20.

Cap.



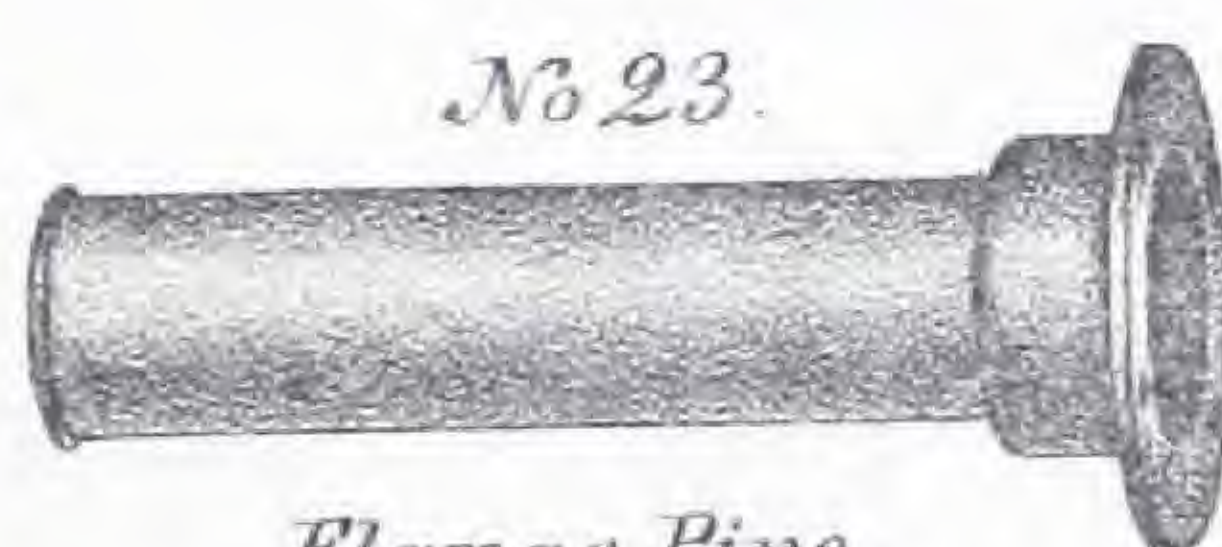
No 21.

Plug.



No 22.

Flanged eighth Bend.



No 23.

Flange Pipe.



No 24.

Reducer, Bell end.



No 25.

P Trap with flange for hopper.



No 26.

Flanged S Trap.



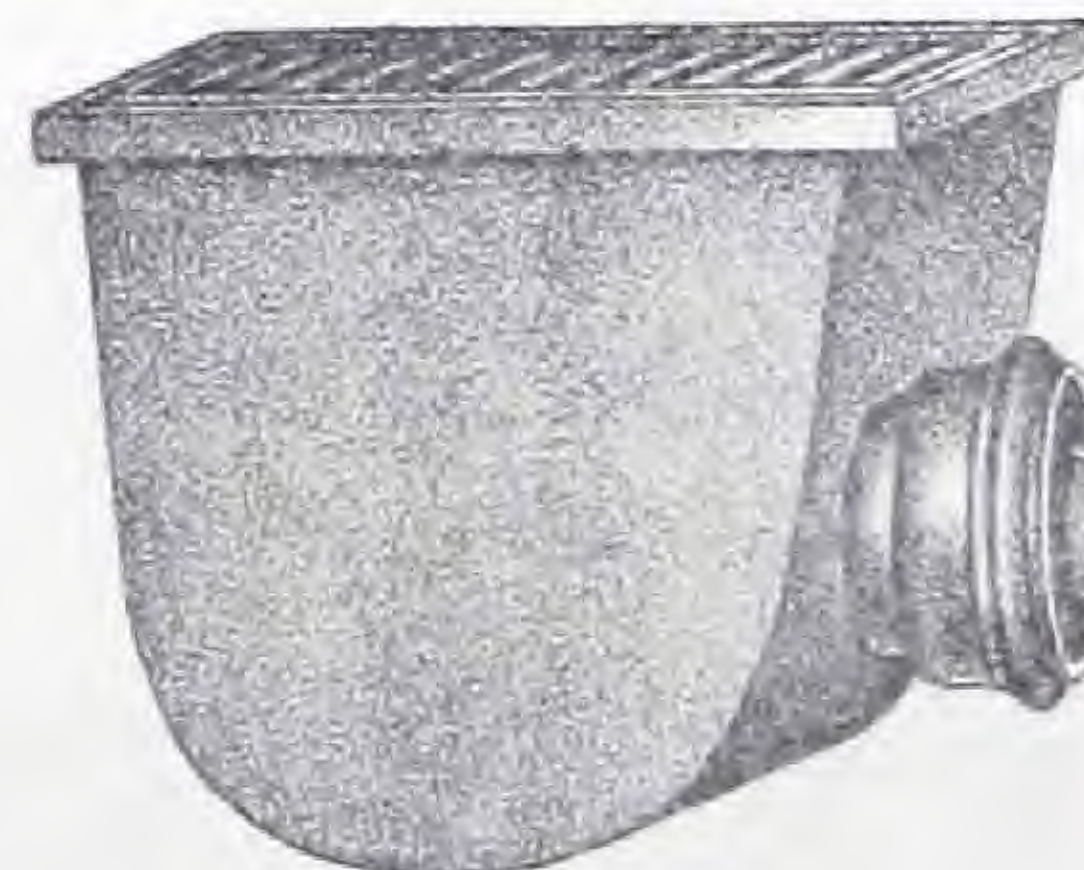
No 27.

Flanged Ell or Bend.



No 28.

Flanged Tee.



No 30.

Round Bottom Drain Trap.



No 32.

Conductor Trap.



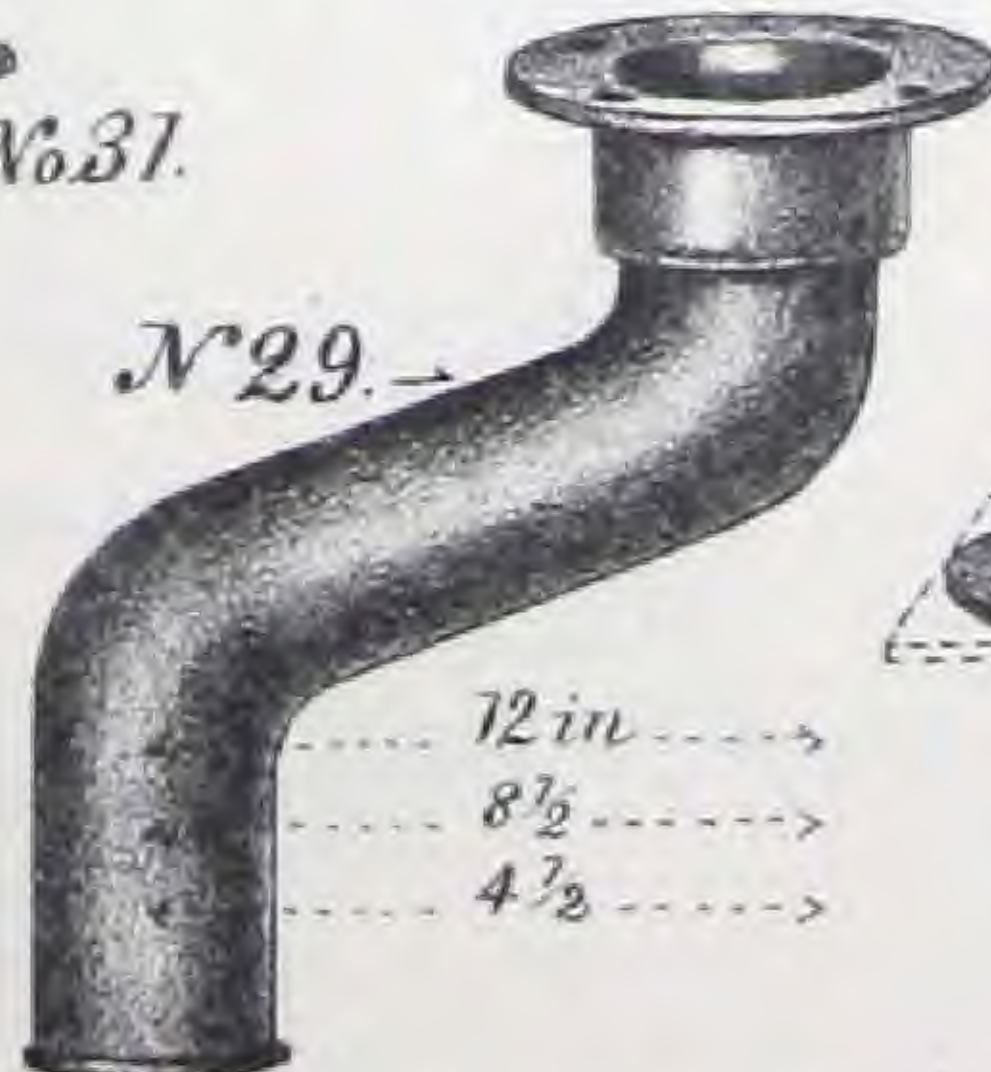
No 33.

Yard Trap.



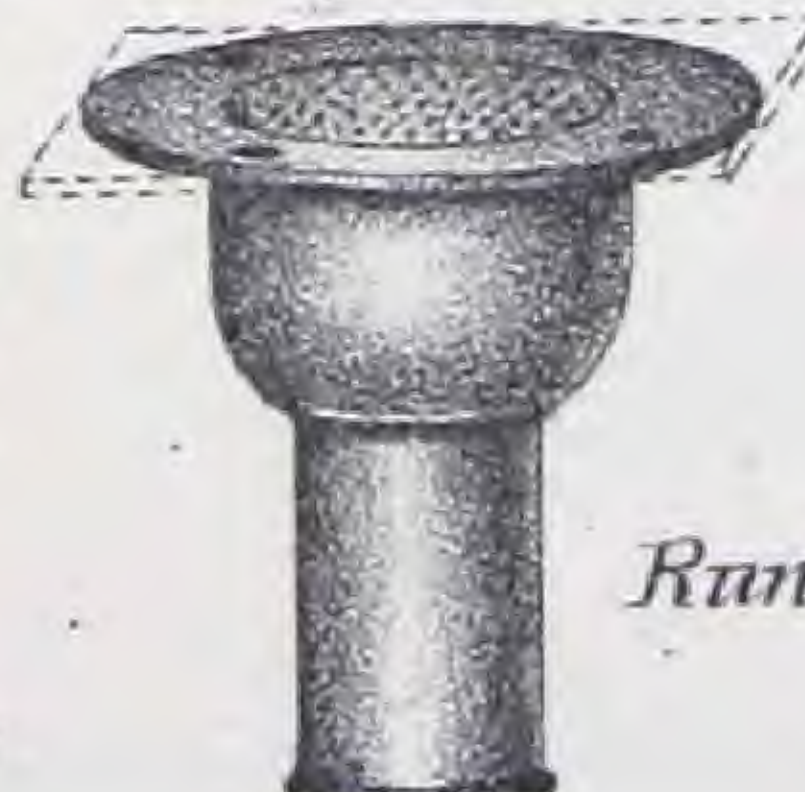
No 31.

Bell Trap.



No 29.

Flanged offset Bend.



No 34 Bell Trap.



No 35.

Running or Belly Trap, without handhole.

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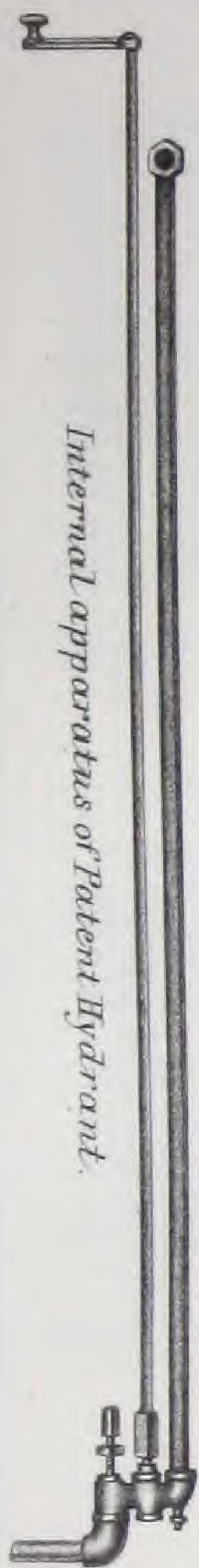
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MORRIS, TASKER & CO'S ILLUSTRATED CATALOGUE.

10th EDITION

CLASS FOURTH.

Plate 2.



Internal apparatus of Patent Hydrant.

No 38.



Patent Hydrant.

No 39.



Wash stand with feet.



No 40.

Wash stand with Pedestal.



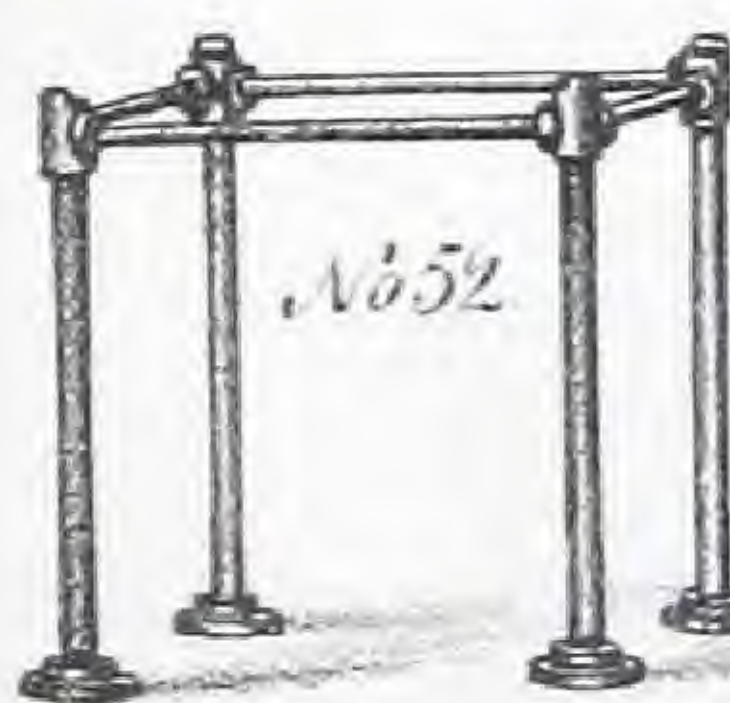
No 41.

Double Basin Wash stand with feet.

No 51



Circulating Hot Water Boiler.



Tubular Stand for upright Bath Boilers.

No 53.

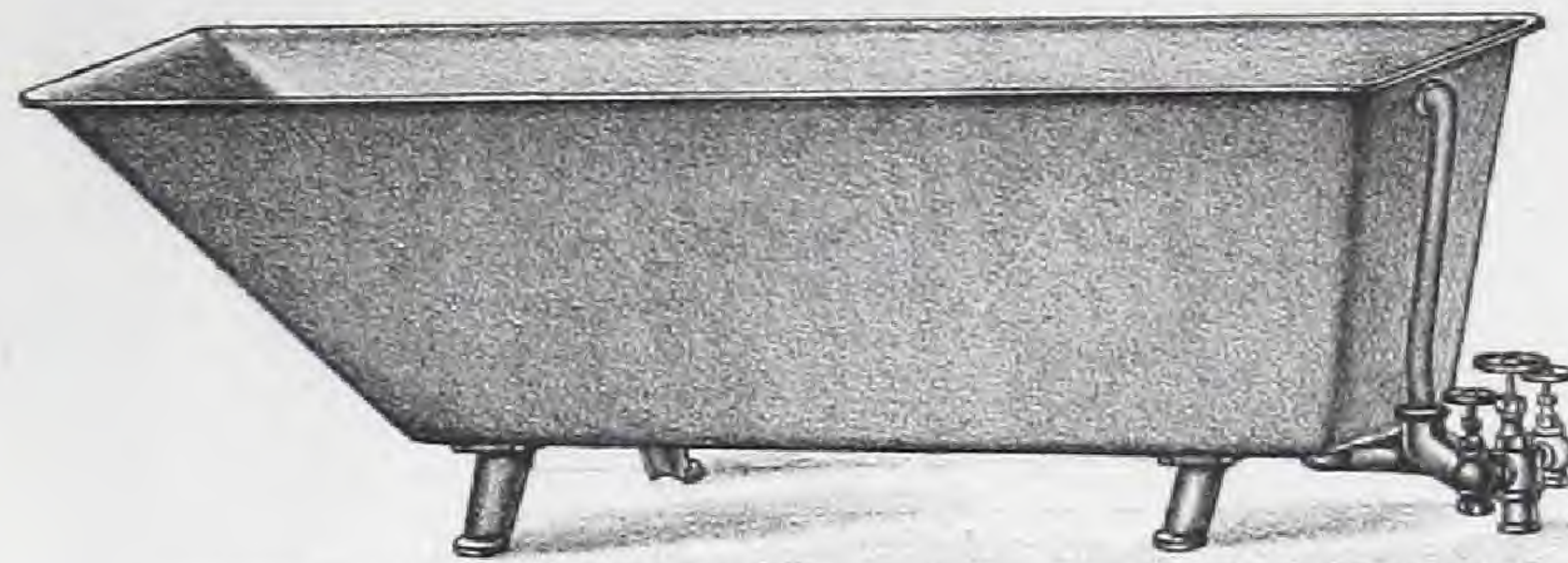


Water Back.



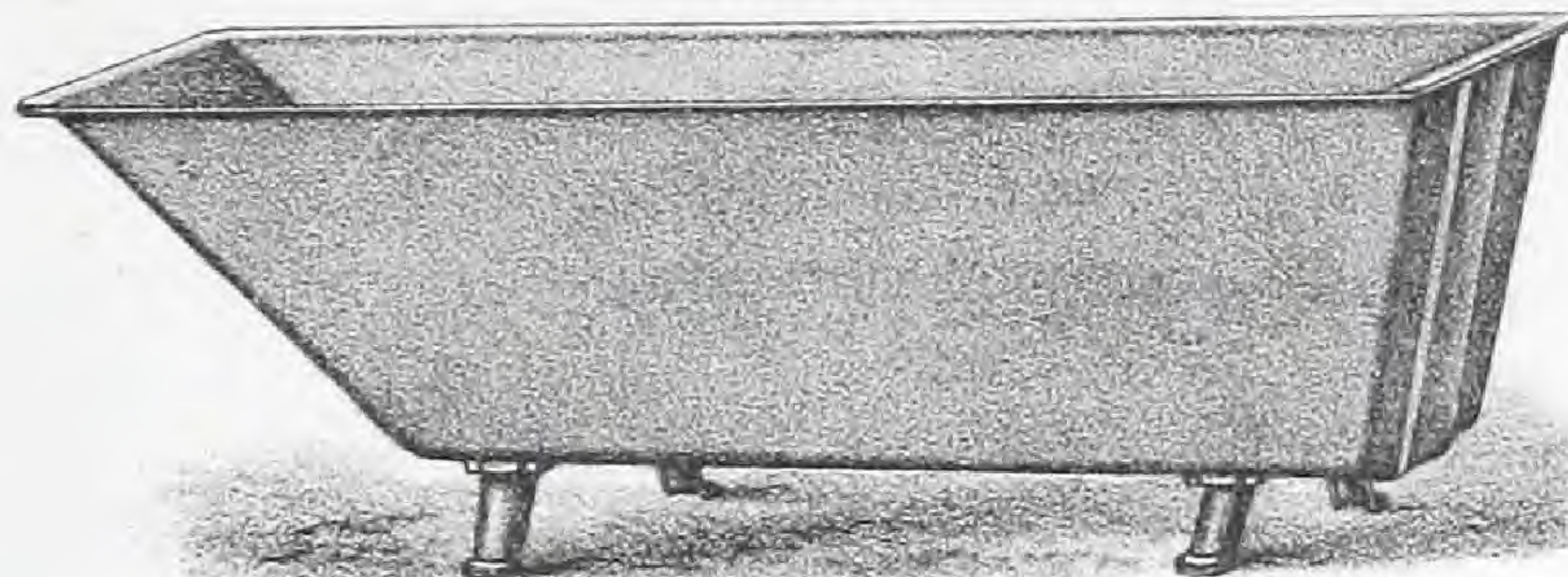
Water Back of Range.

No 42.



Bath Tub with supply & waste Valves and overflow combined. (generally for Hospitals)

No 43.



Bath Tub with secret Overflow.

No 44.

No 45.

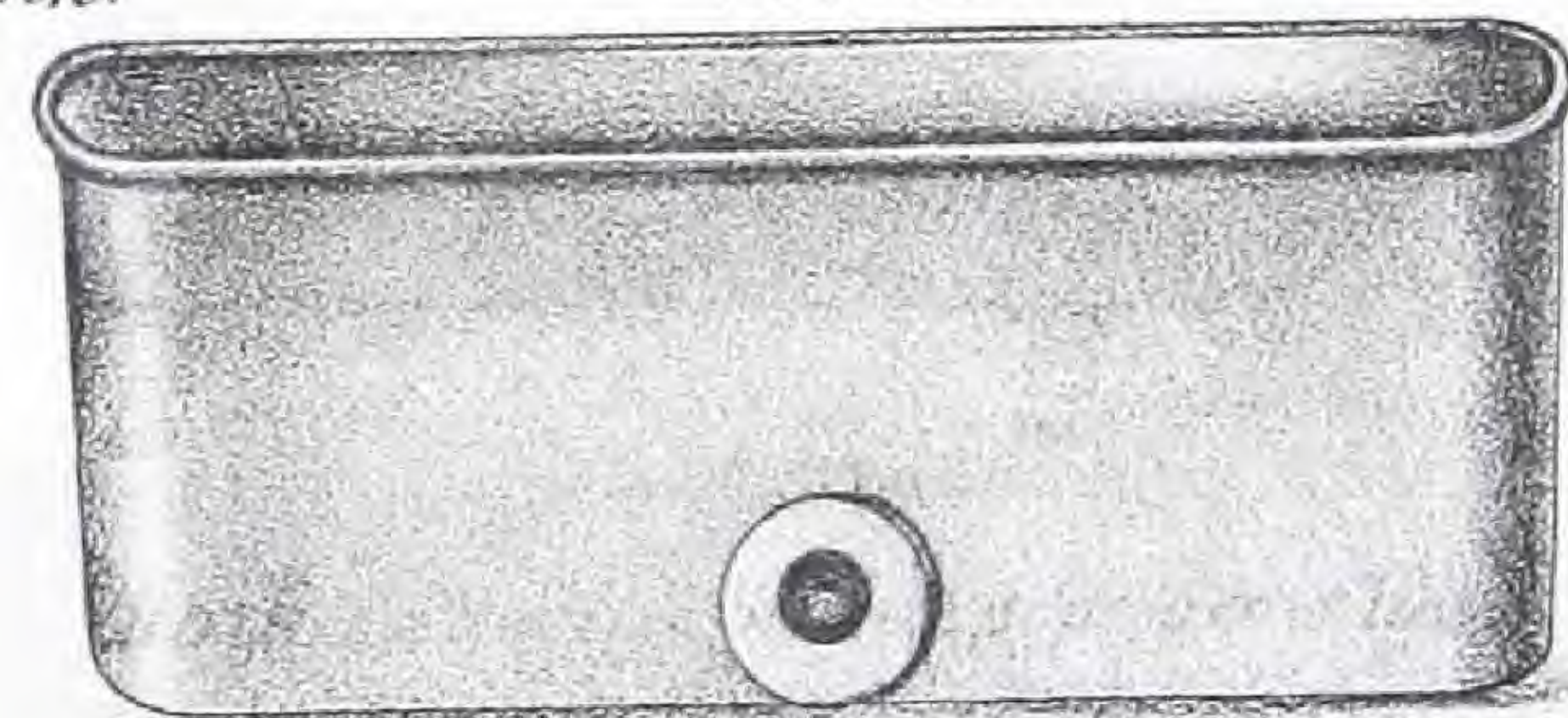


Round Tank.

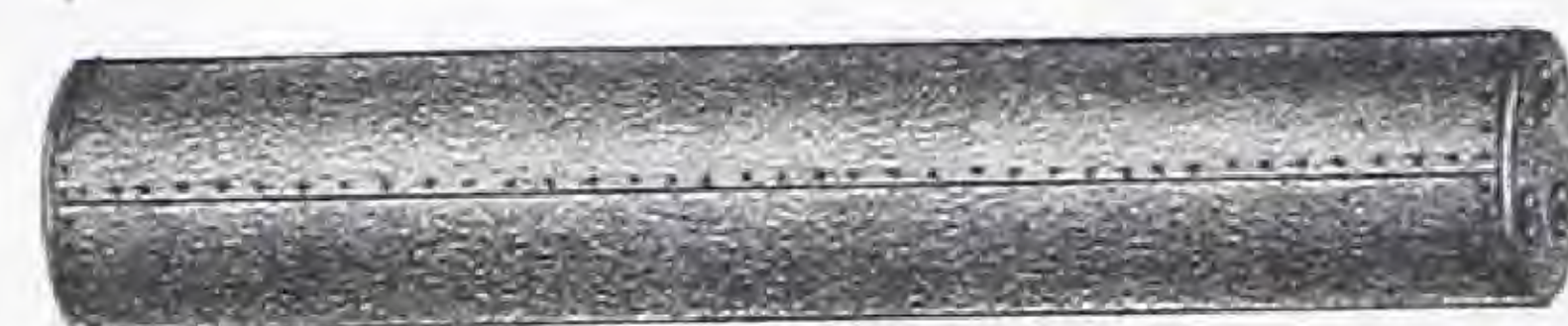


Oblong Tank or Bosh.

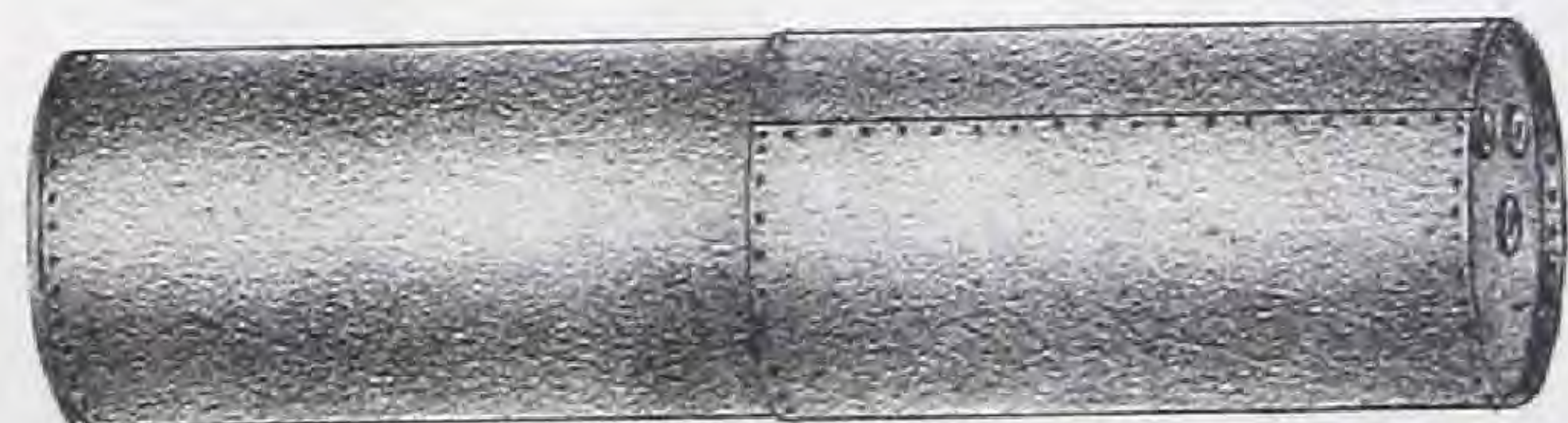
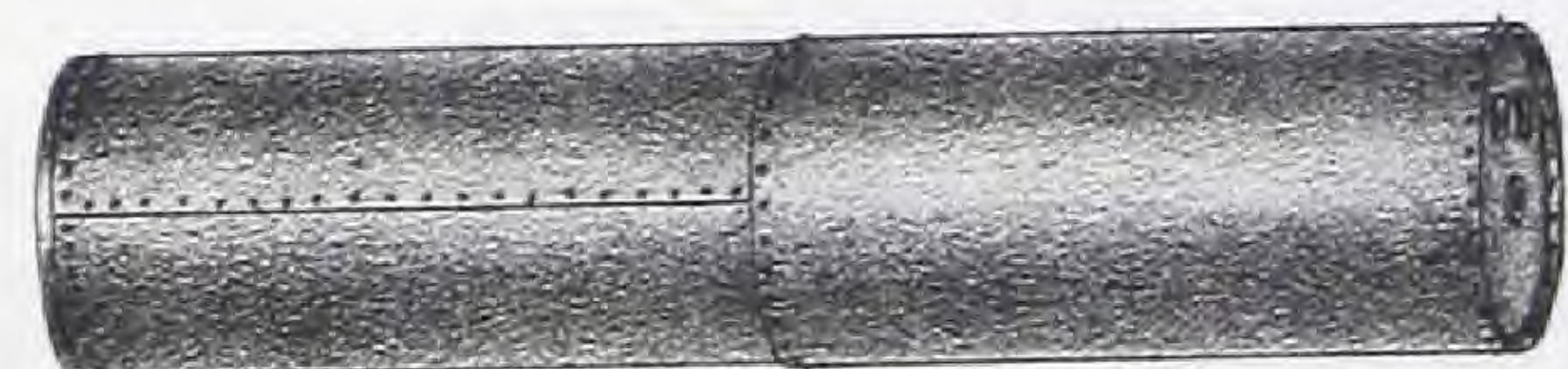
No 46.



Large Oval Tank.



No 51.



Bath Boilers.

No 48.



Stop Cock Box, plain or Gas Lid.

No 49.



Stop Cock Box, plain or Gas Lid.

No 50.



Stop Cock Box, plain or Gas Lid.



Parement Pipe, plain or Gas Lid.

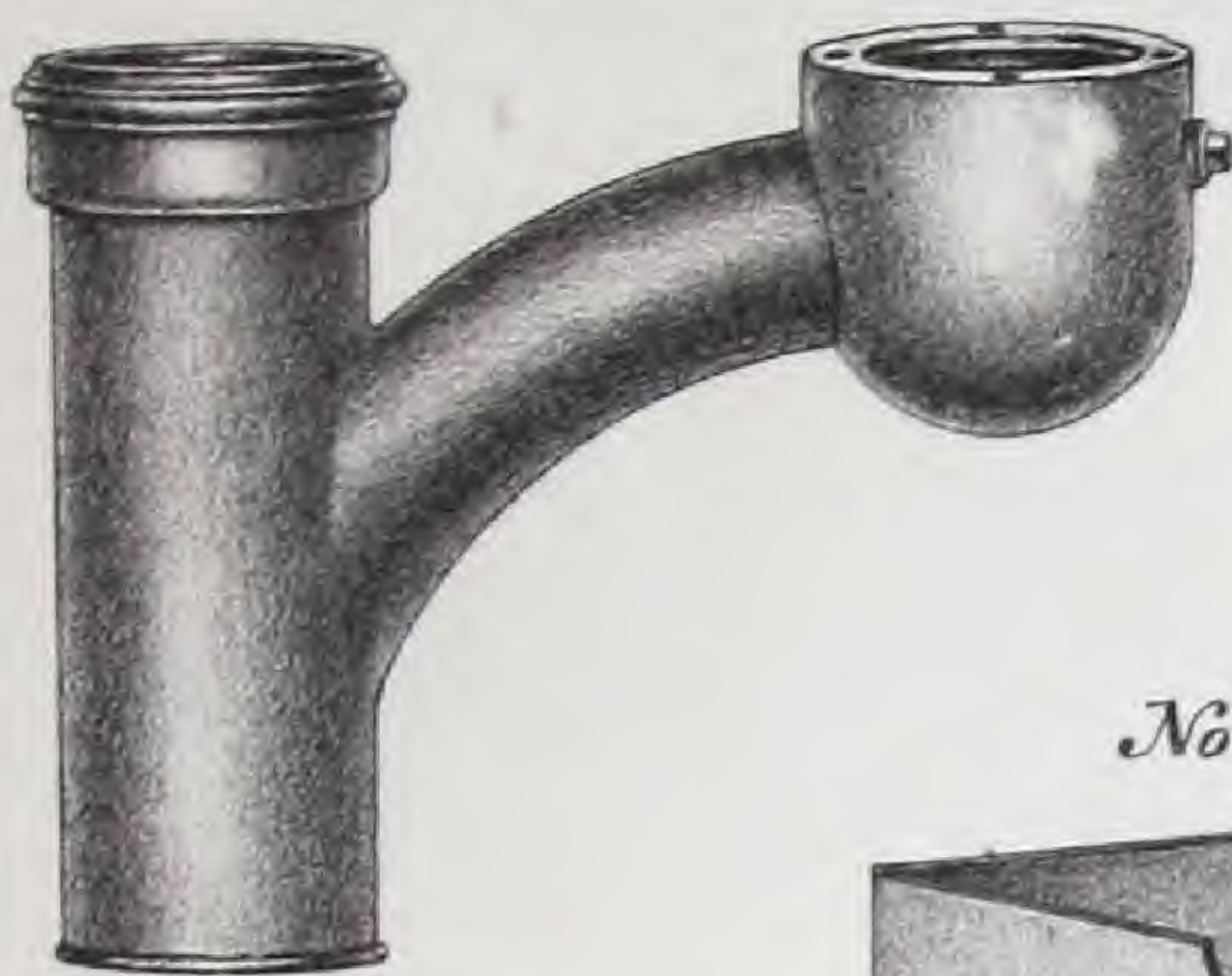
MORRIS, TASKER & CO'S ILLUSTRATED CATALOGUE.

10th EDITION

CLASS FOURTH.

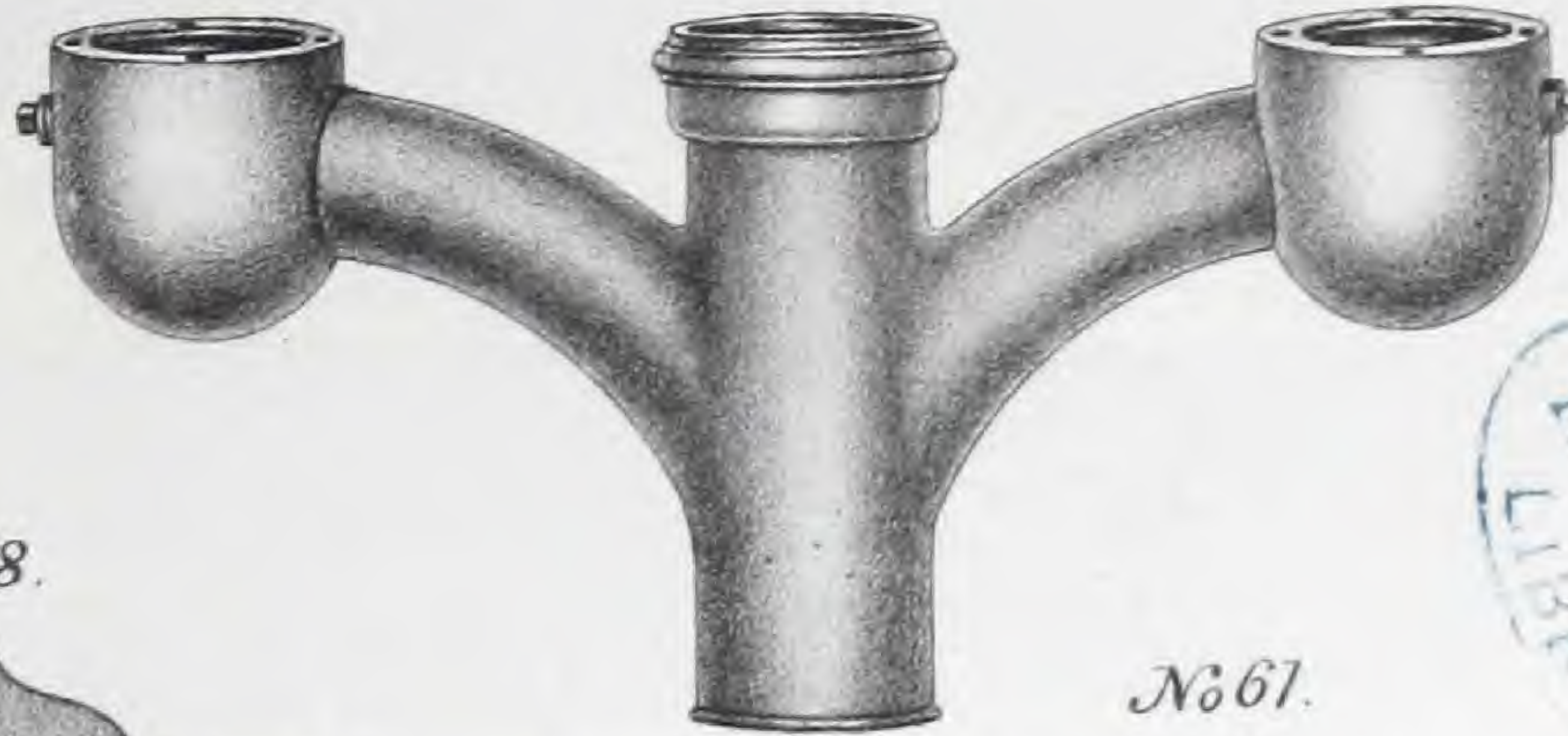
Plate 3.

No 56.



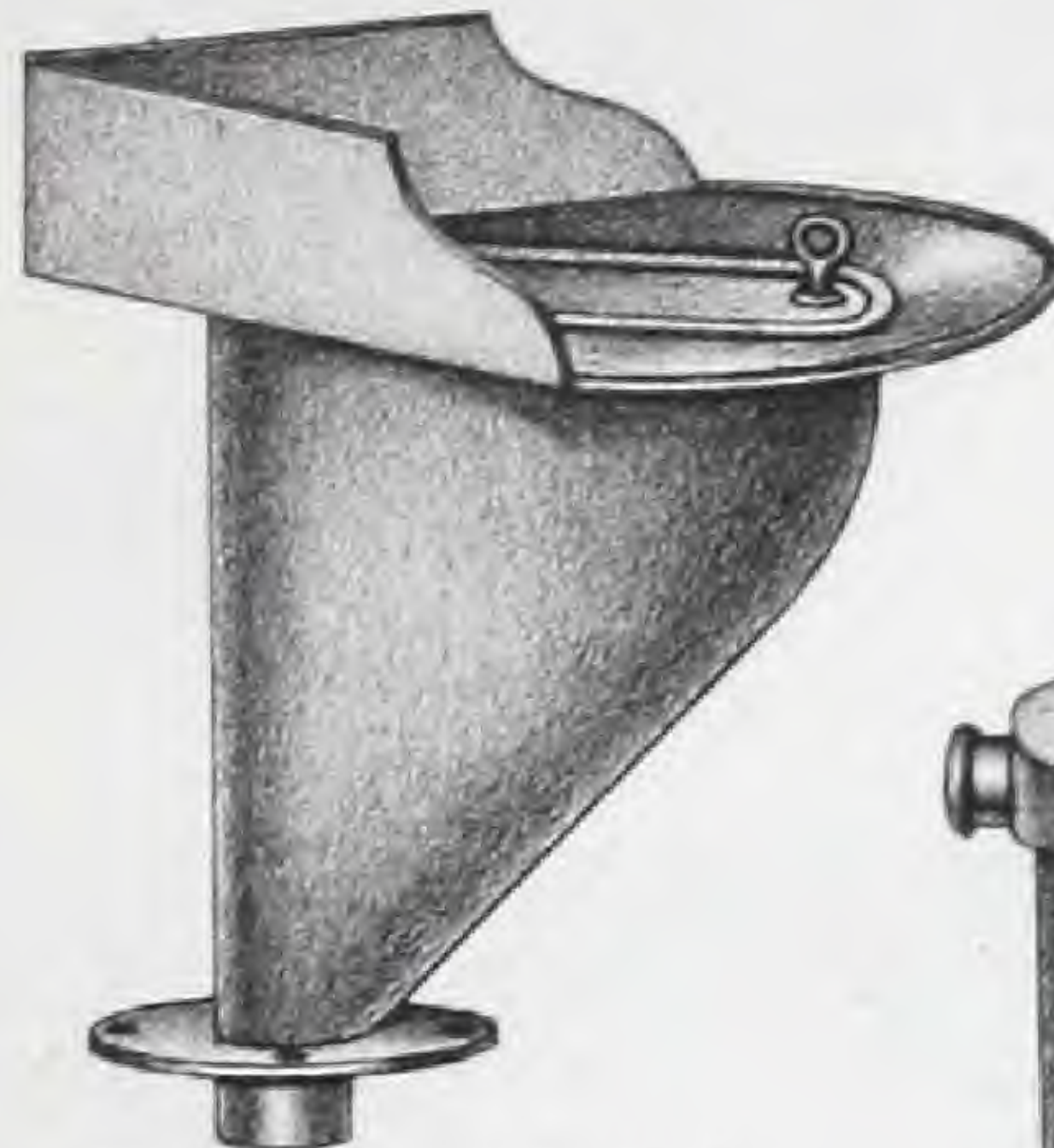
Single Soil Branch.

No 57.



Double Soil Branch.

No 58.



Slop Hopper with Lid.

No 59.



Oval Hopper.

No 60.



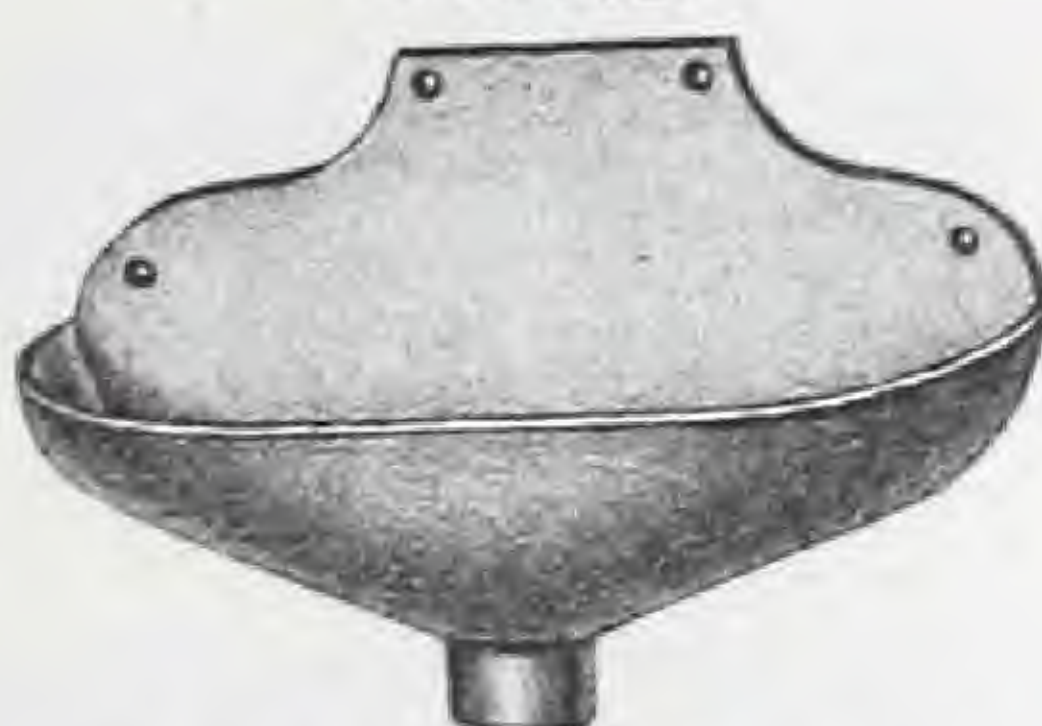
Oval Hopper with wooden Rim.

No 61.



Corner Urinal.

No 62.



Half round Urinal.

No 63.



Circular Hopper with flange.

No 64.



No 68.



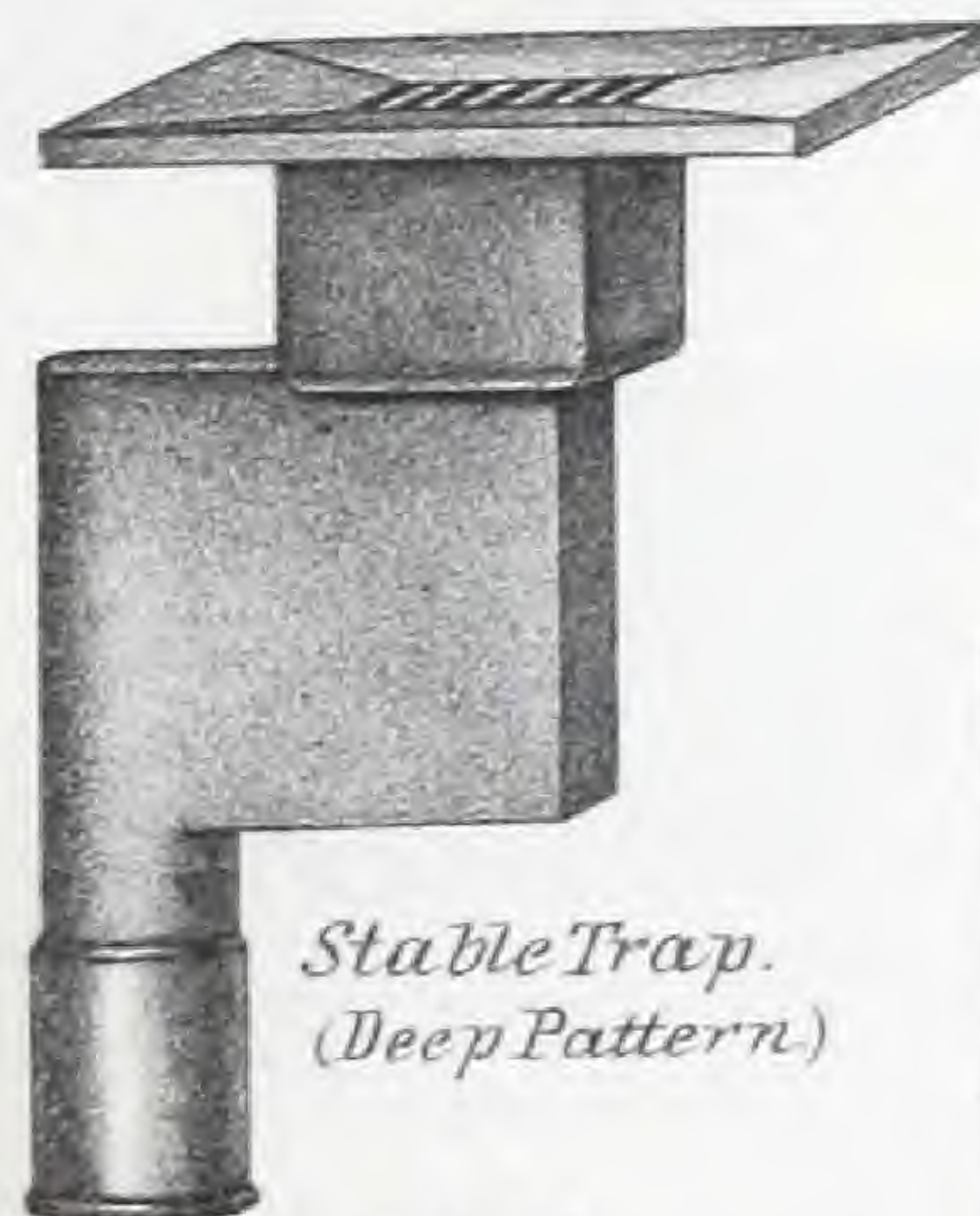
Drain Grate.

No 65.



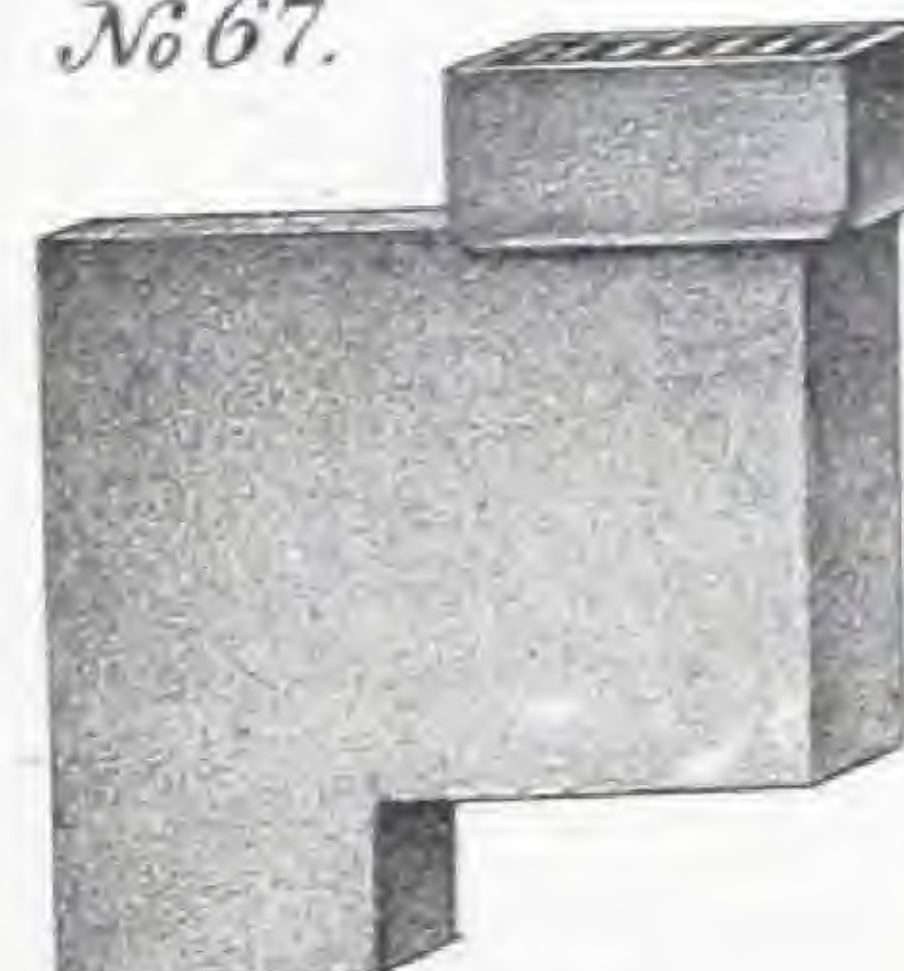
Stable Trap.
(Box Pattern.)

No 66.



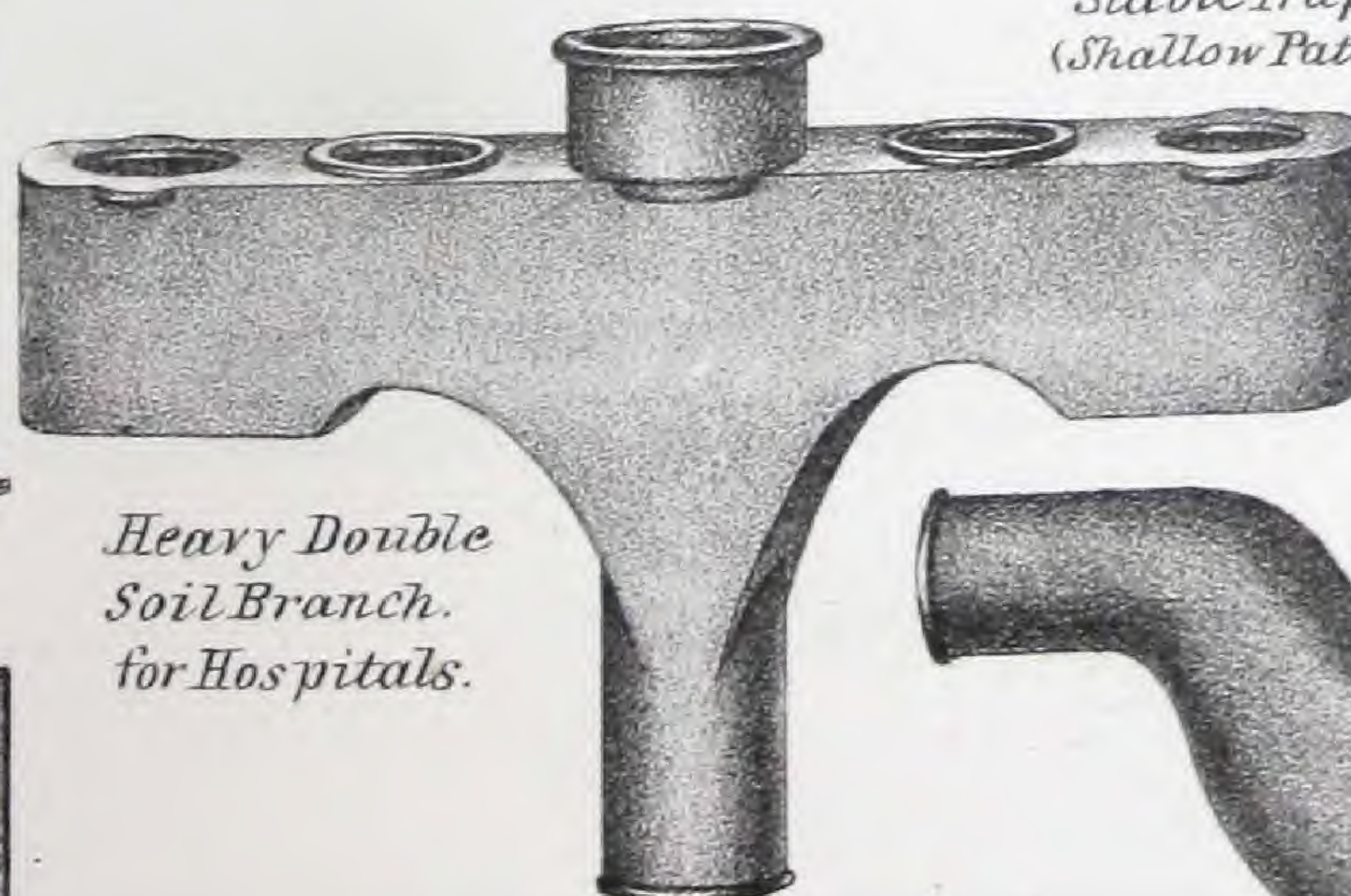
Stable Trap.
(Deep Pattern.)

No 67.



Stable Trap.
(Shallow Pattern.)

No 70.



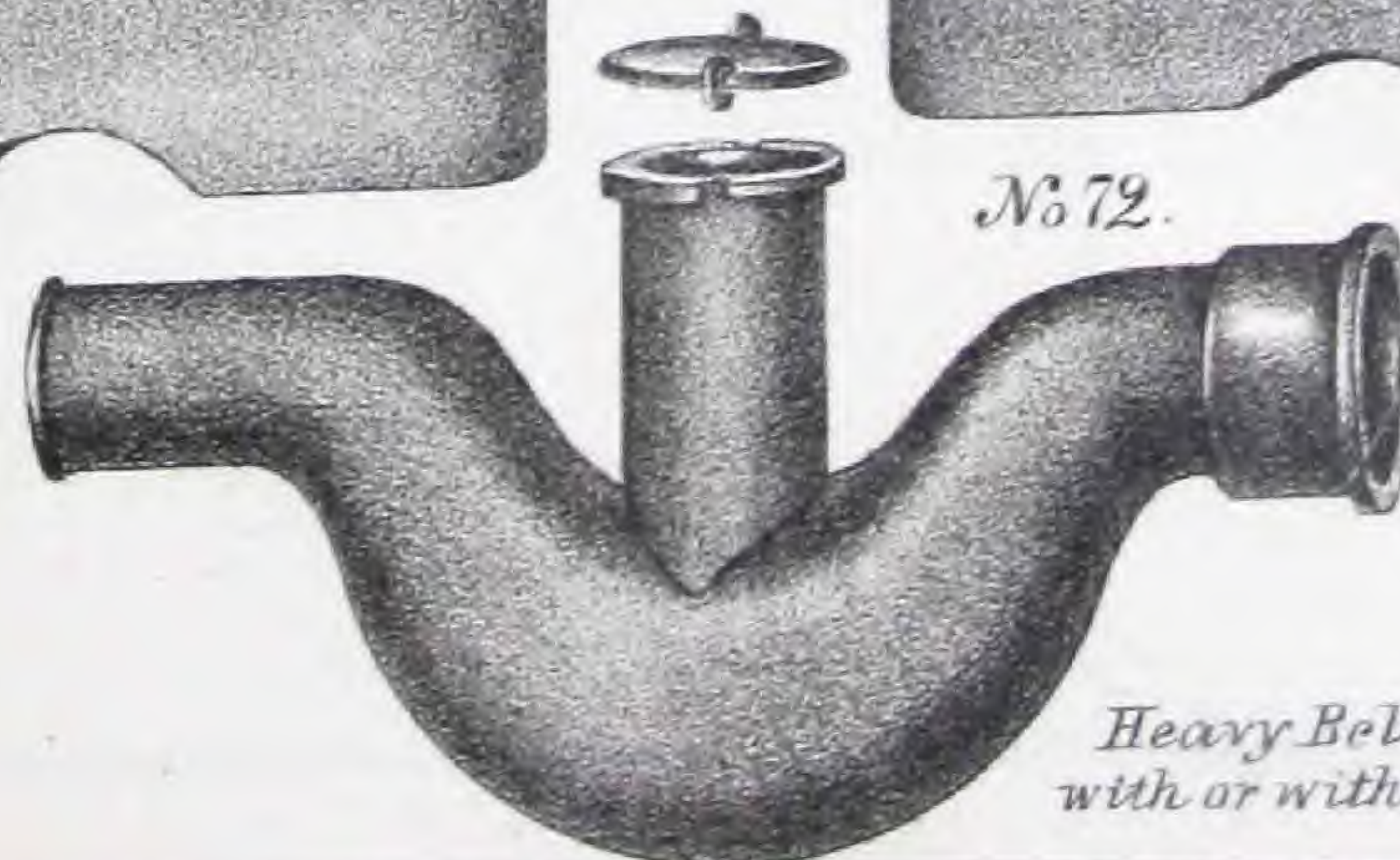
Heavy Double
Soil Branch.
for Hospitals.

No 71.

Heavy Single Soil
Branch for Hospitals

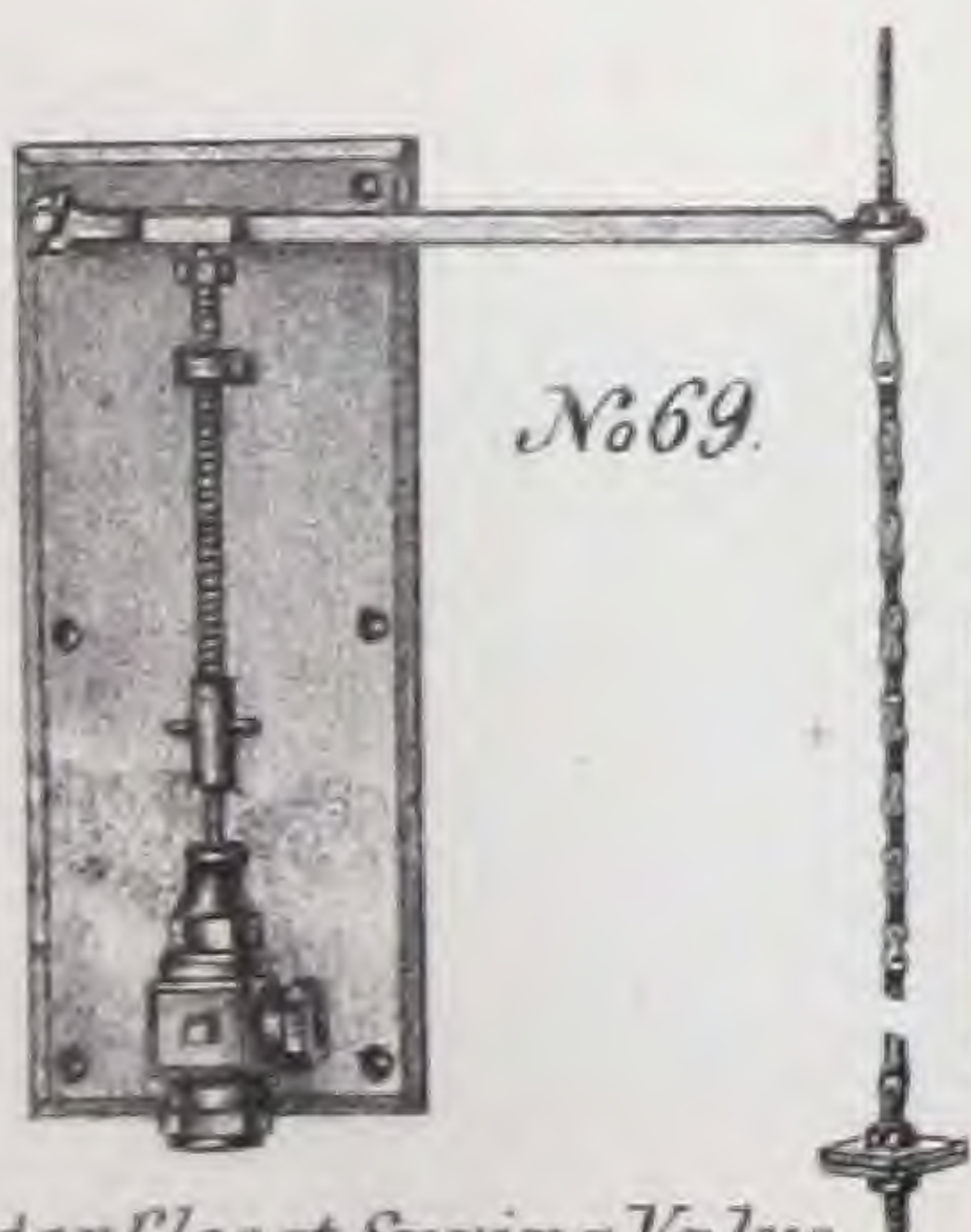


No 72.



Heavy Belly Trap,
with or without Hand hole

No 69.



Water Closet Spring Valve,
generally for
Hospitals.

Chain Pulleys for
No 69.



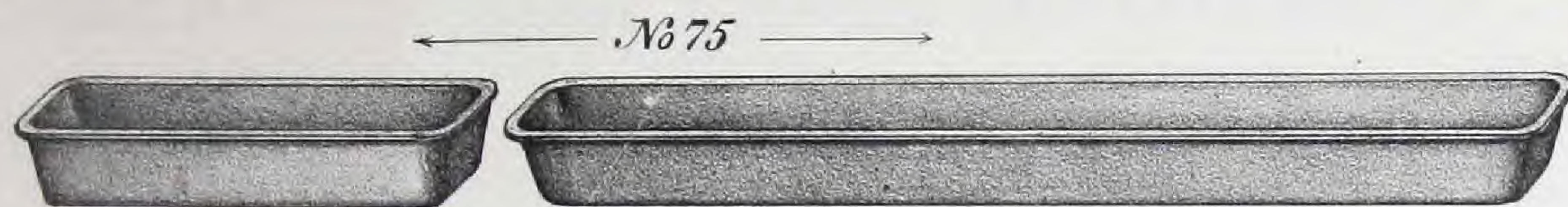
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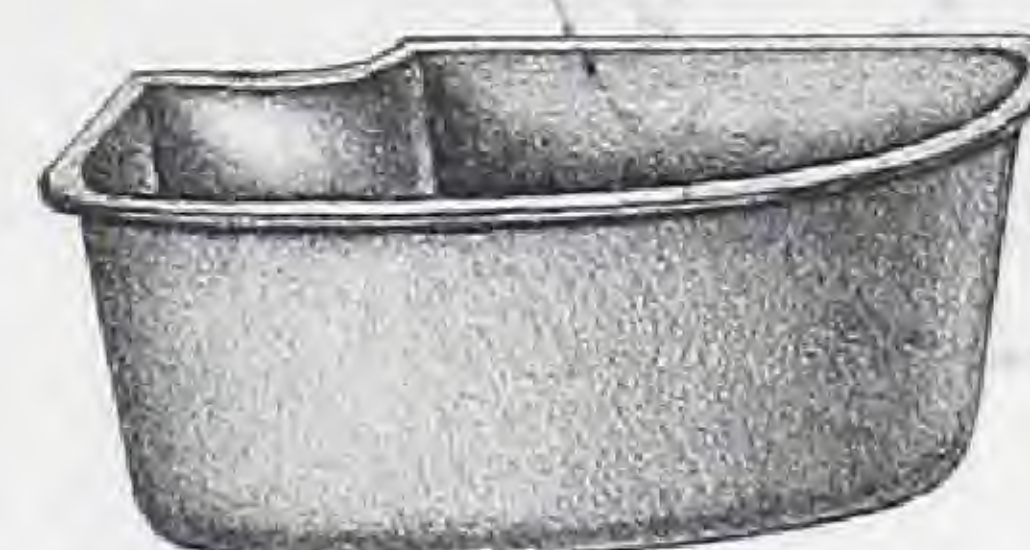
CLASS FOURTH.

Plate 4.

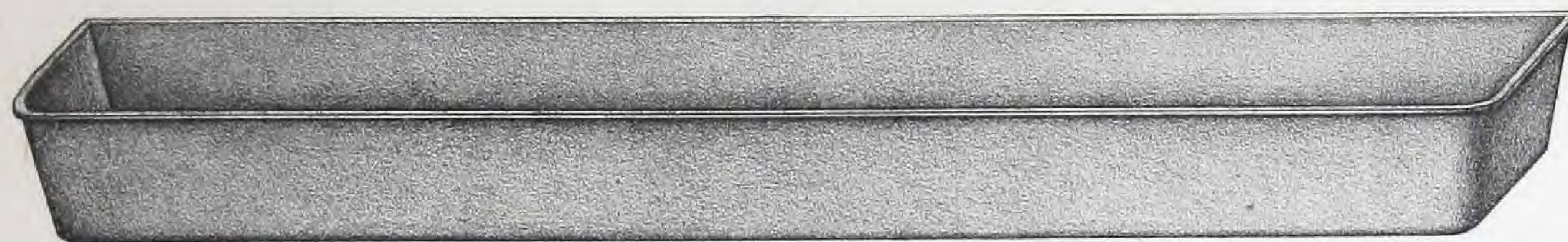


Evaporators.

No. 77.



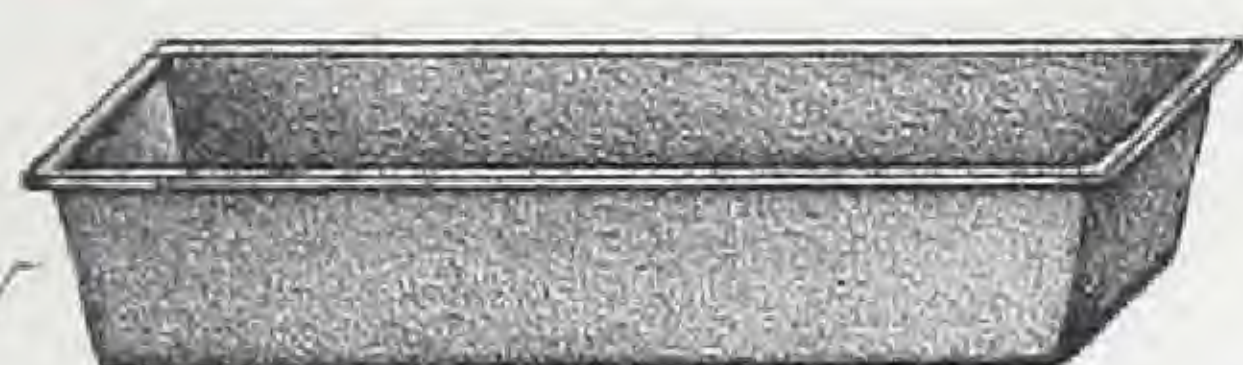
Corner Sink, to fit Post or Pipe
(Manger Box.)
No. 78.



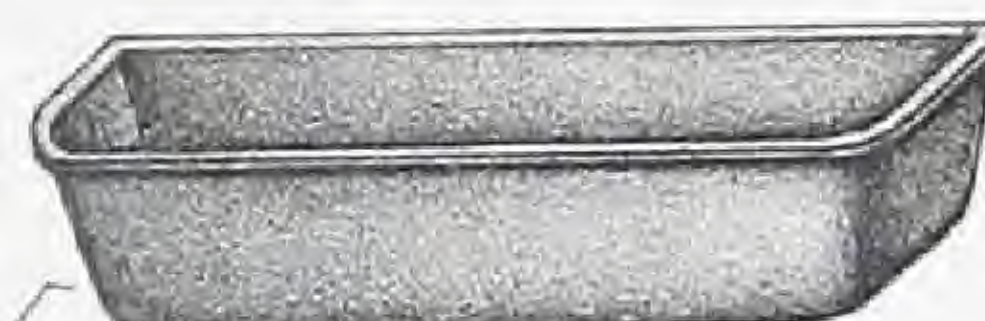
Round corner Sink.



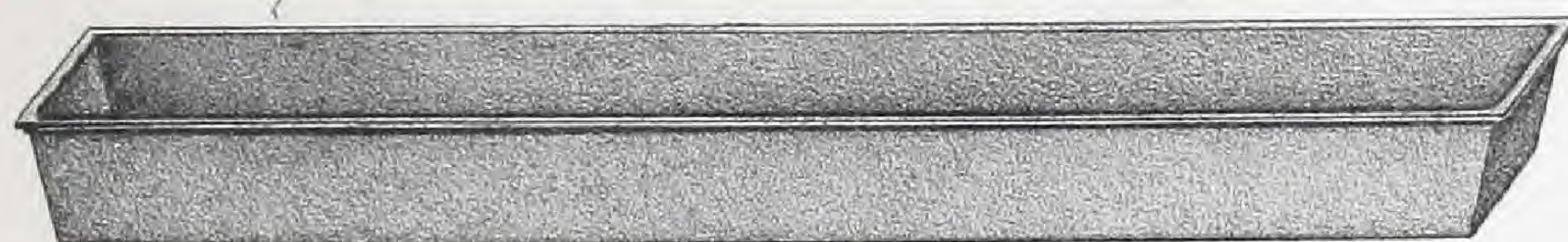
Corner Slop Sink.
(Manger Box.)



No. 79.



No. 80.



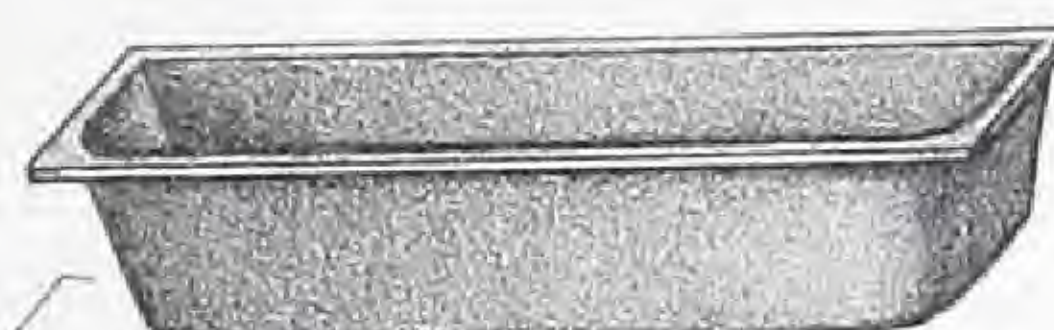
Square corner Sink



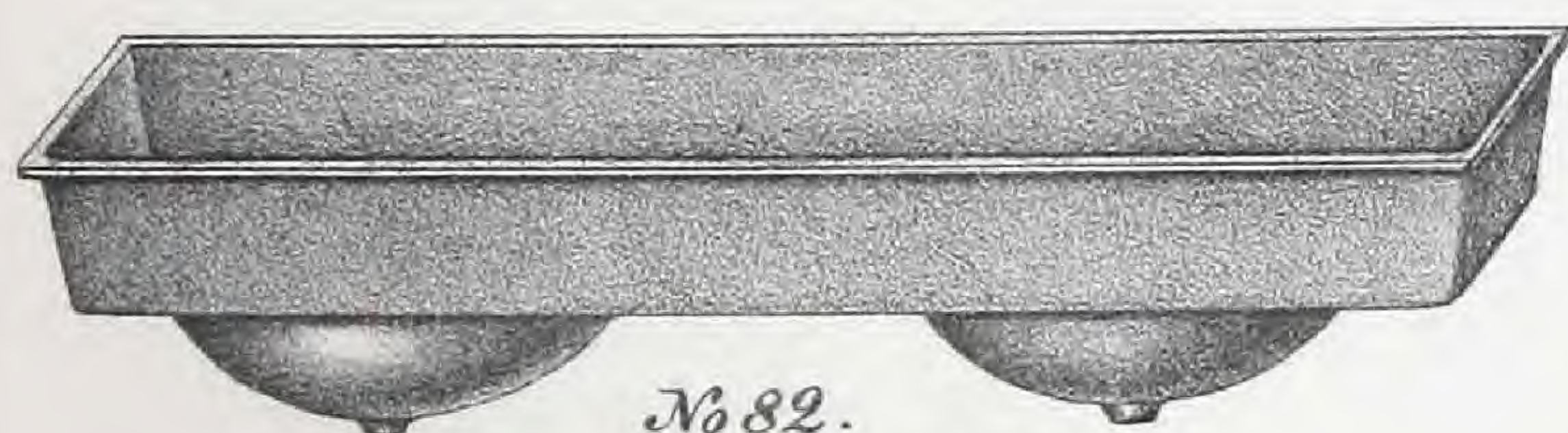
Round corner Sink



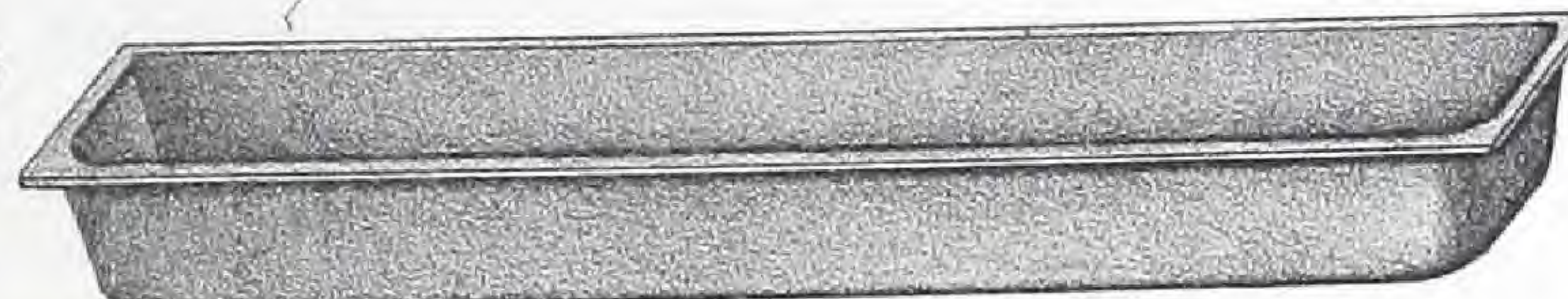
No. 81.
Basin Sink.



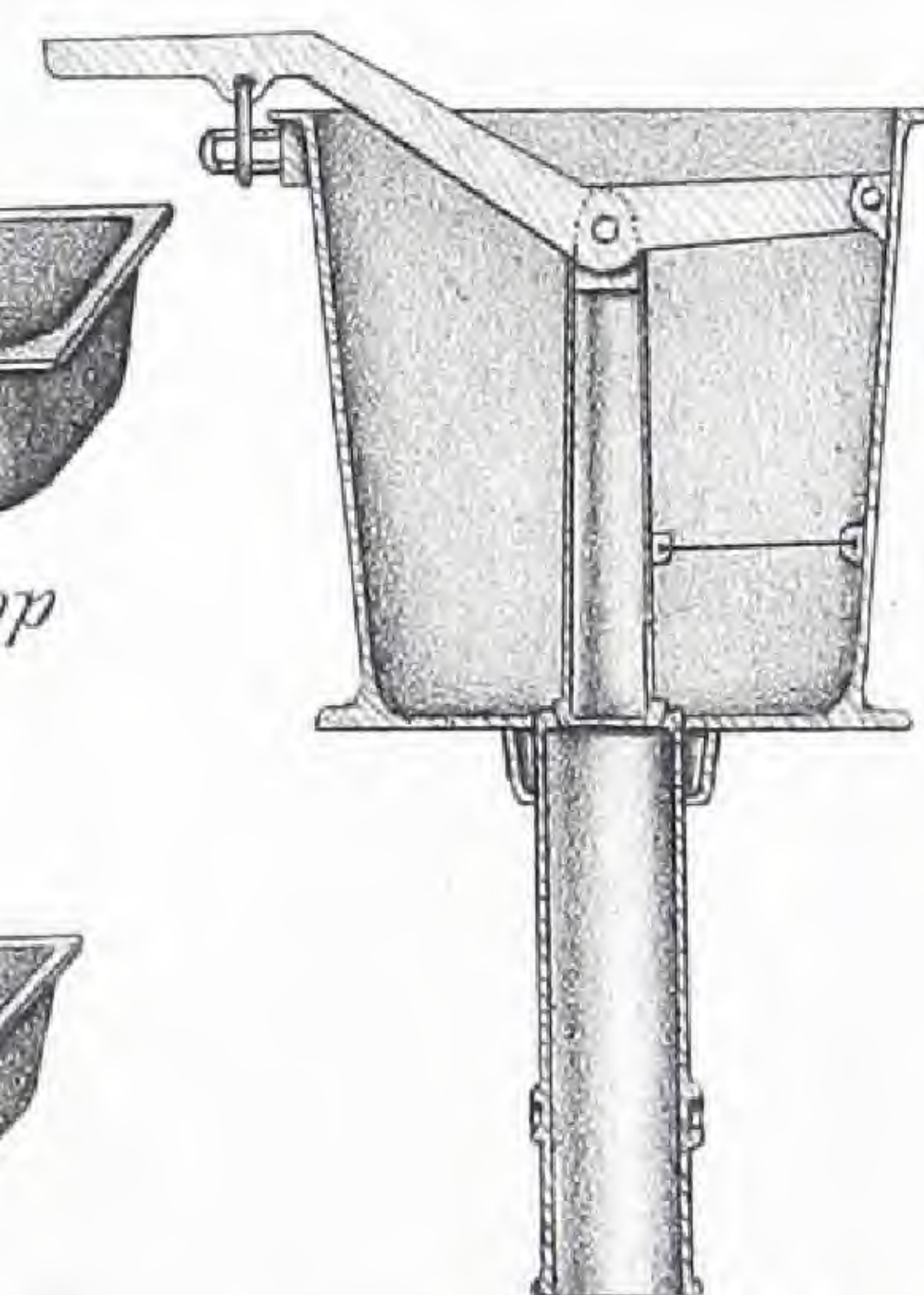
No. 83.



No. 82.
Double Basin Sink.



Round corner Sink with square corner top
No. 86.



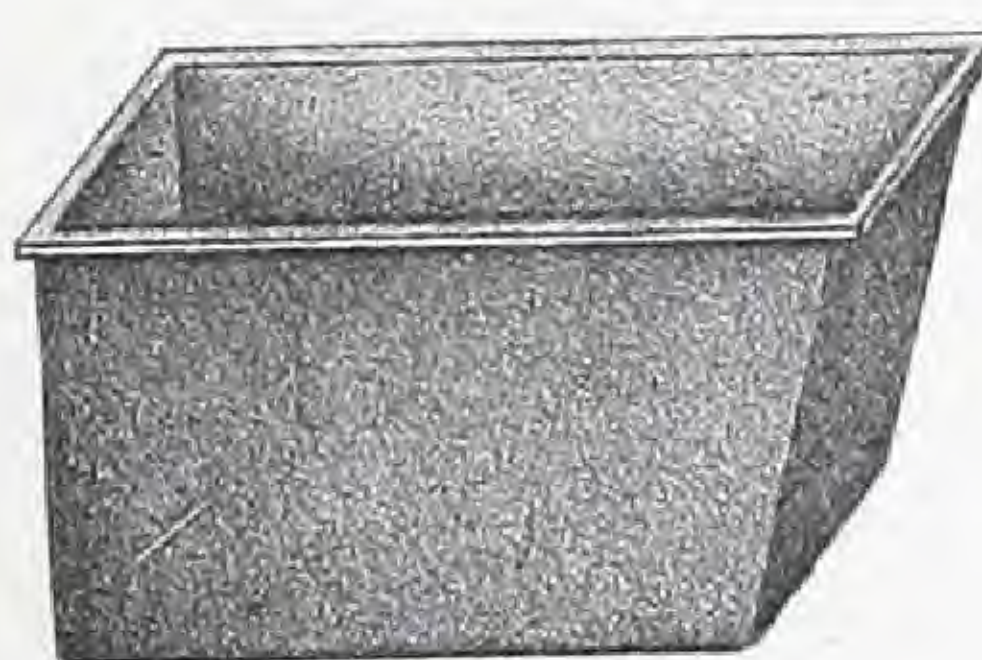
Section through Plug
of No. 88.



No. 84.



No. 85.



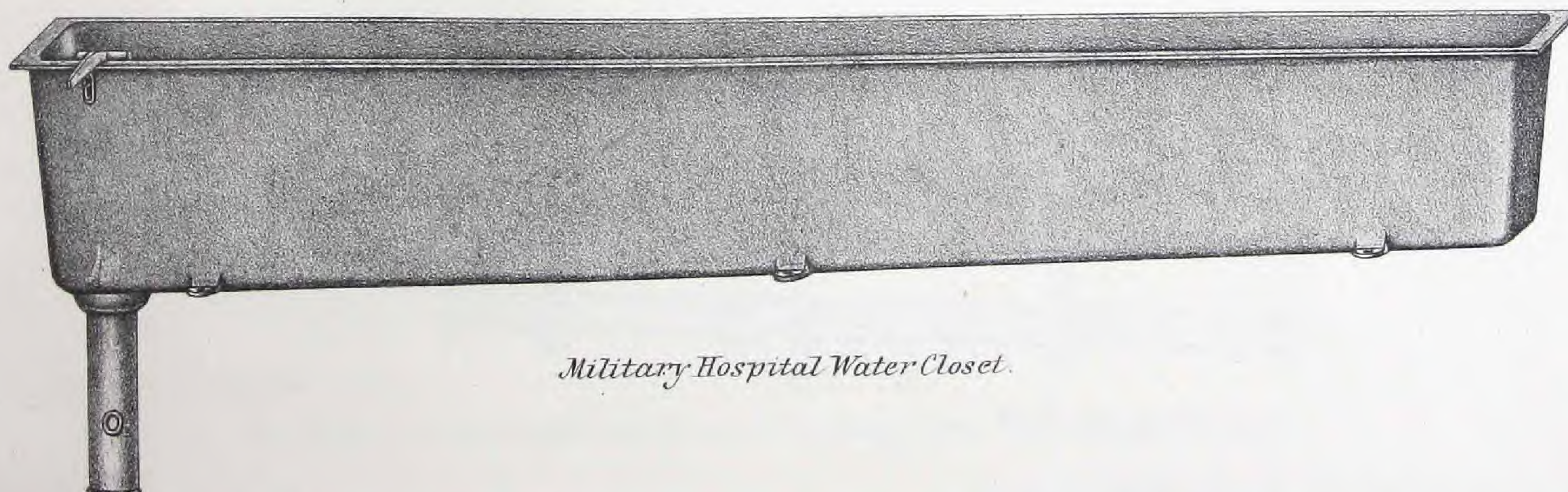
Square Slop Sink.
(Manger Box.)
No. 88.



No. 87.

Sink with Overflow.

Oval Wash Basin. Round Wash Basin,
back overflow.



Military Hospital Water Closet.

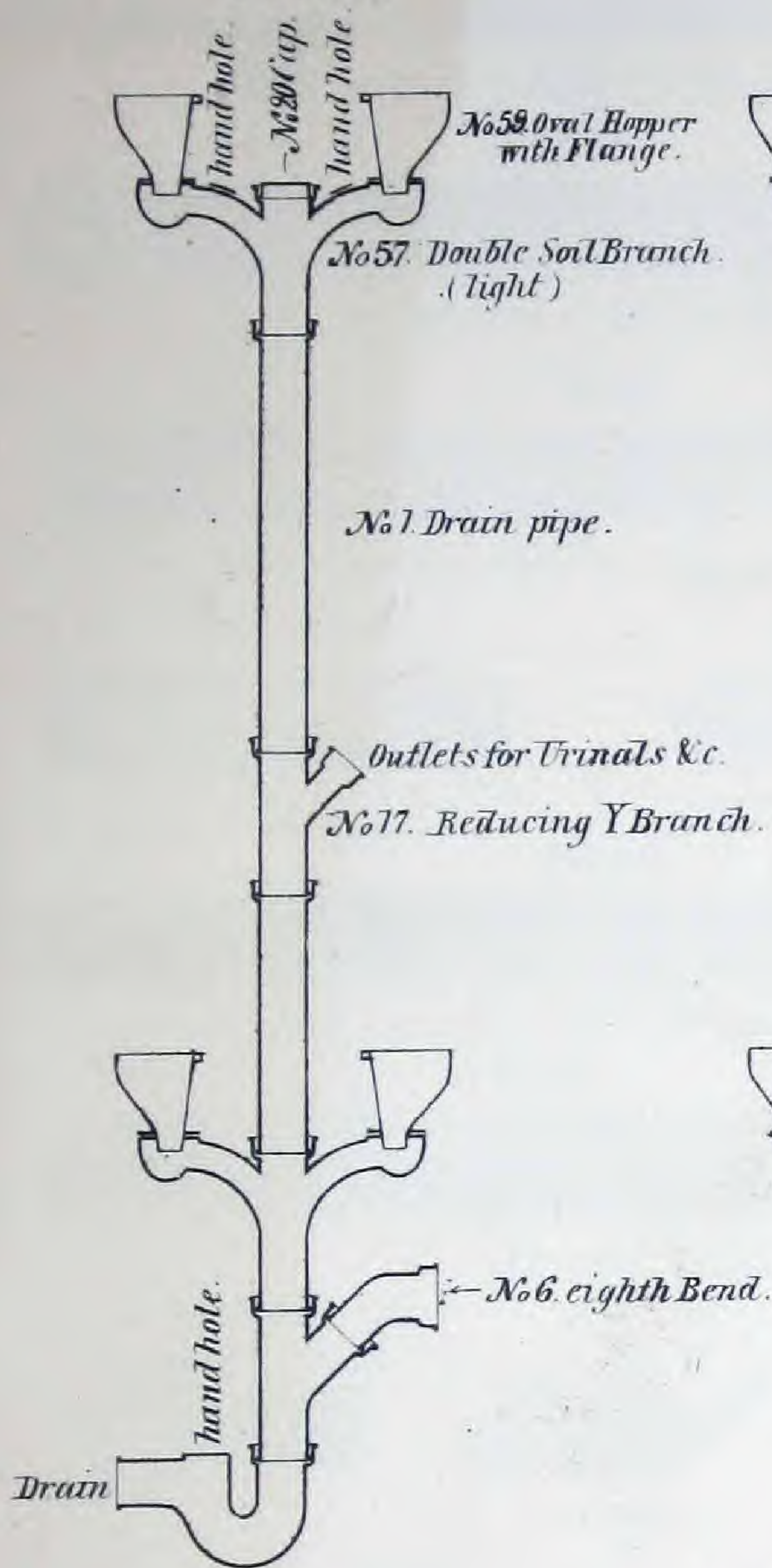
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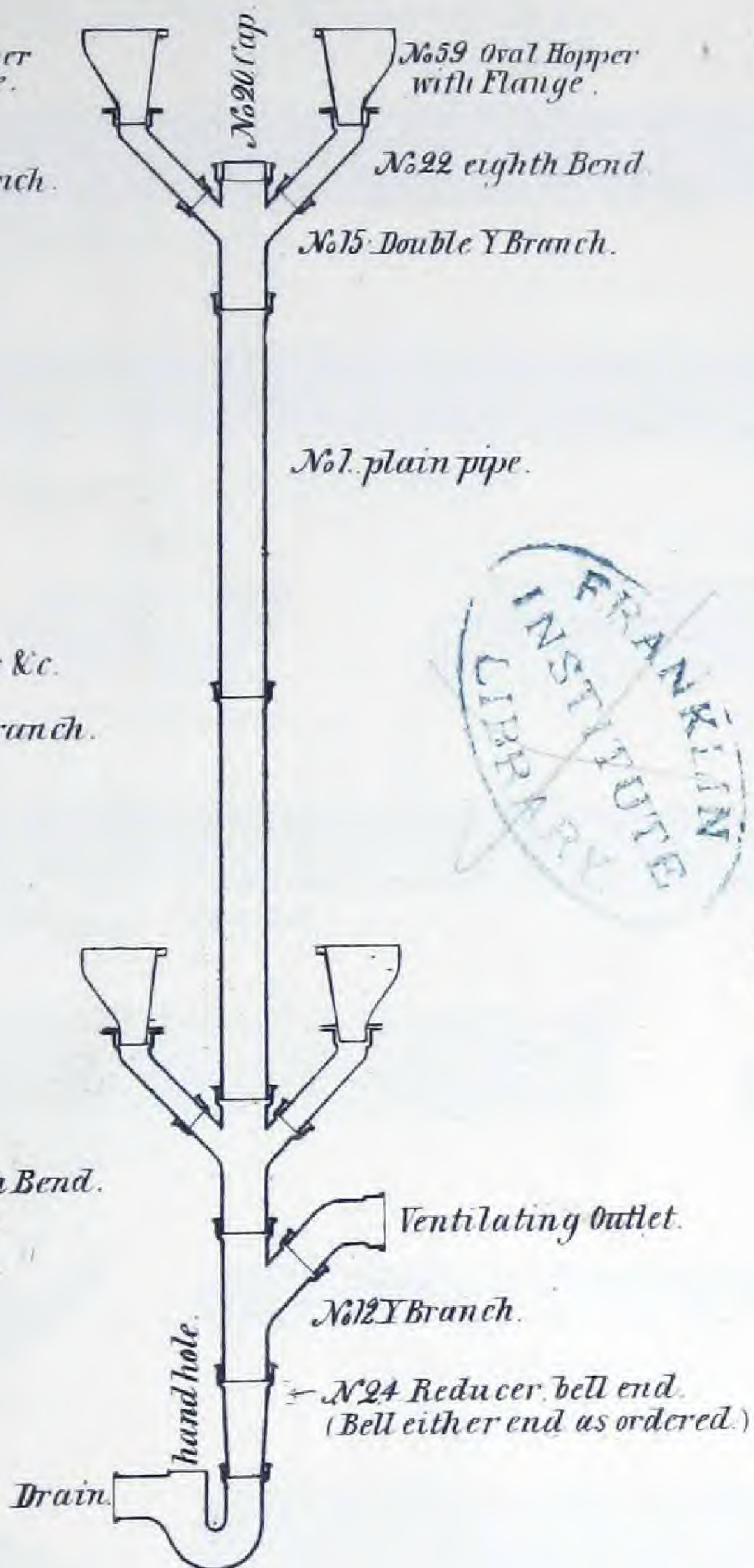
CCA

WATER CLOSET ARRANGEMENTS.

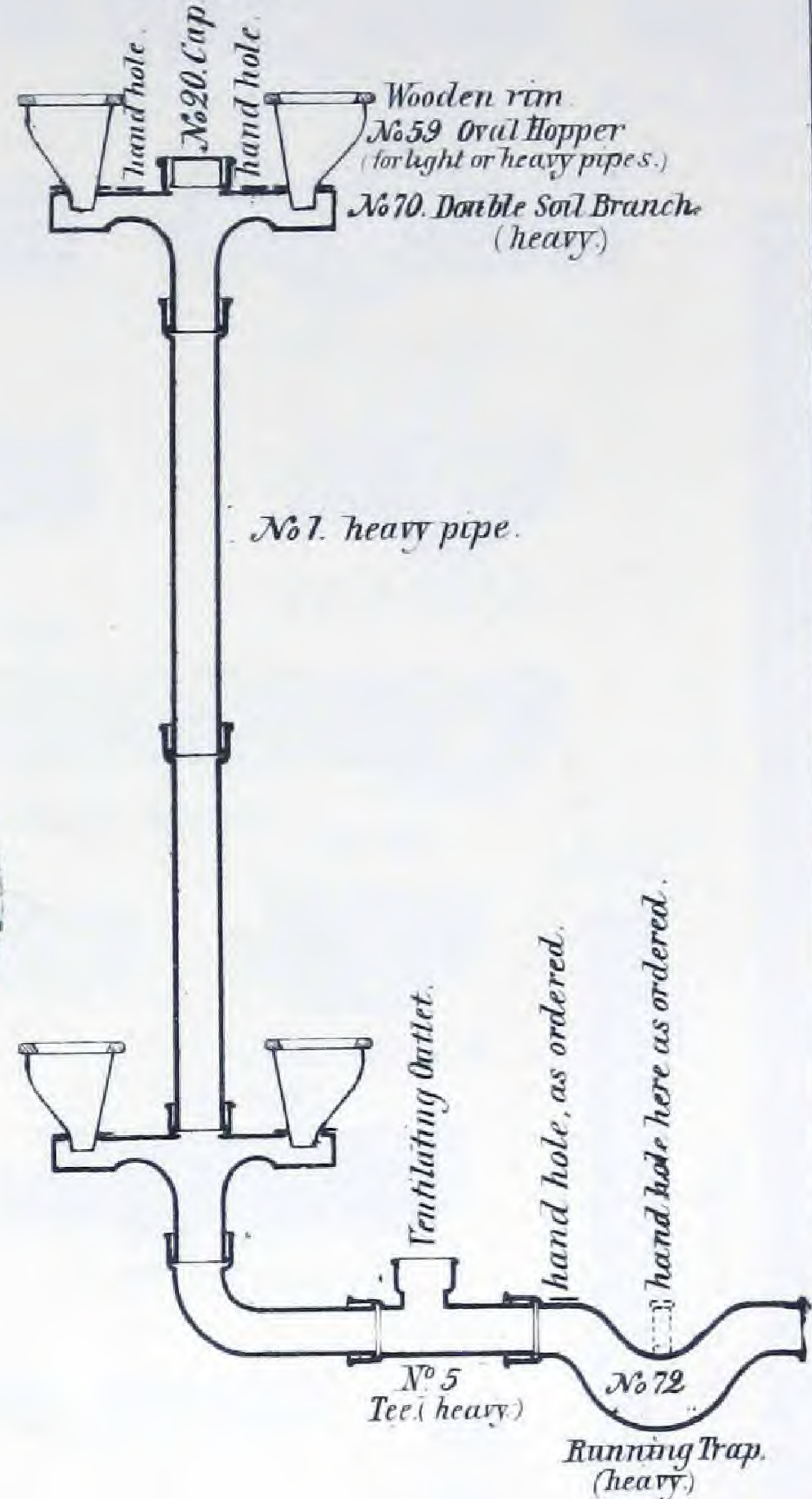
FIRST.



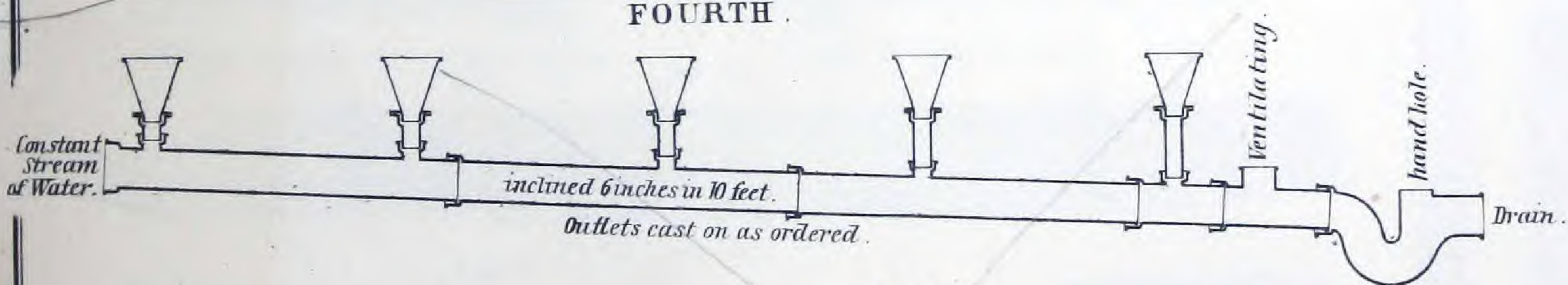
SECOND.



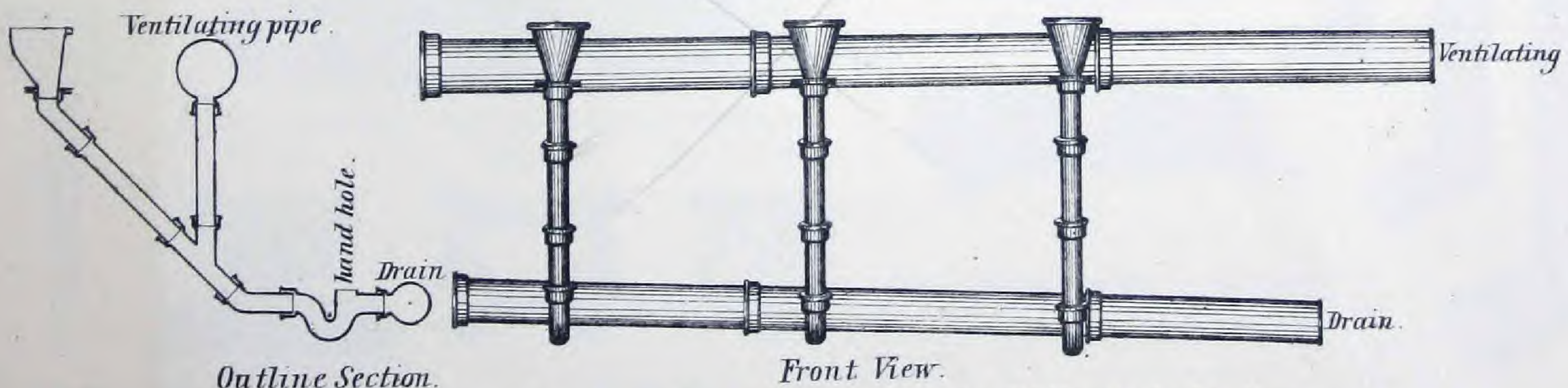
THIRD.



FOURTH.



FIFTH.



Outline Section.

Front View.

The supply of water to hoppers can be made by spring Valve No. 69 attached to door.

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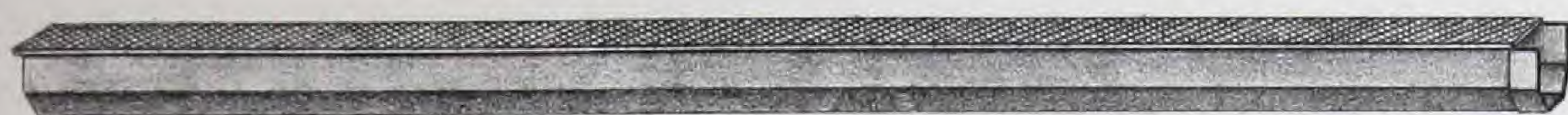
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10th EDITION

CLASS FOURTH.

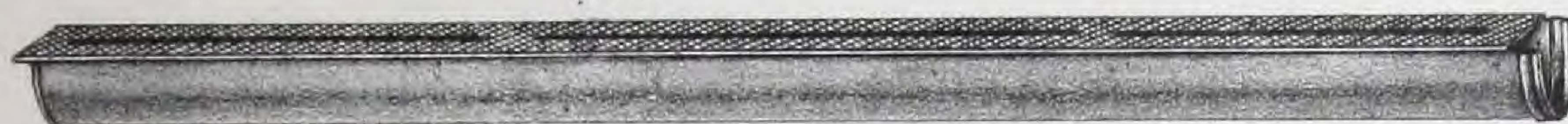
Plate 6.

No 90.



Half octagon Side walk Gutter, diamond cover.

No 93.



London Pattern Side walk Gutter & cover.

No 96.



Half round Side walk Gutter, reeded cover.

No 97.

No 98.

No 100.



Gutter Branch.



Gutter Bend.



Return Ends.



Gutter Branch.



Gutter Bend.

No 94.

No 116.

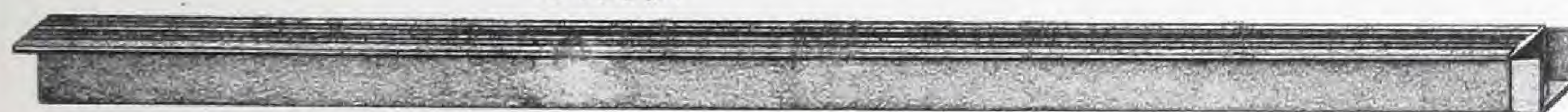


Gutter Branch.

No 95.

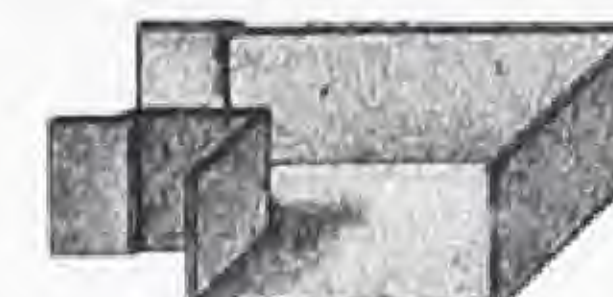


Gutter Bend.



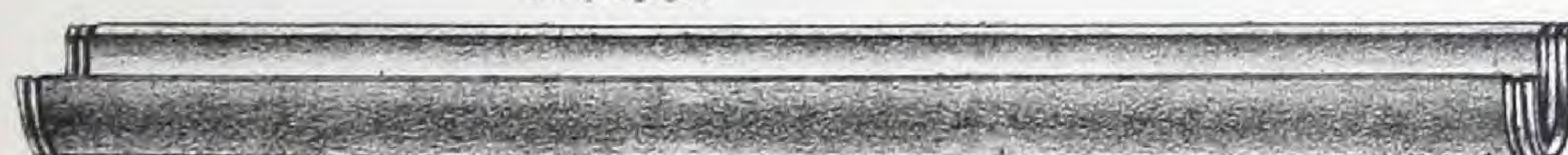
Square Side walk Gutter, fluted cover.

No 103.



Gutter Bend.

No 102.



Eaves Gutter.



Gutter Branch.

No 104.

No 105.

No 106.

No 118.



Hip Corner.

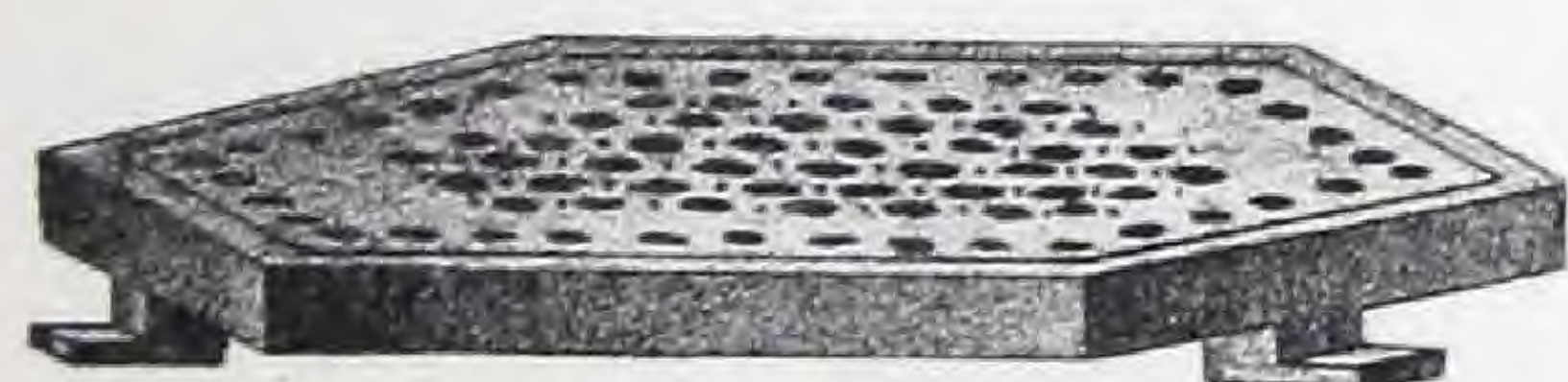


Corner.

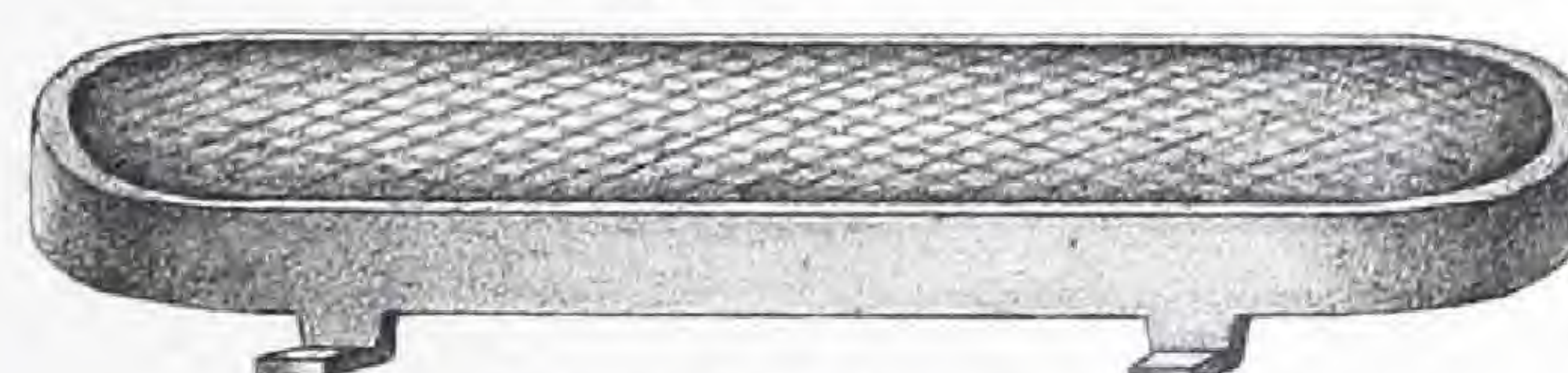


Pavement Grate.

No 108.

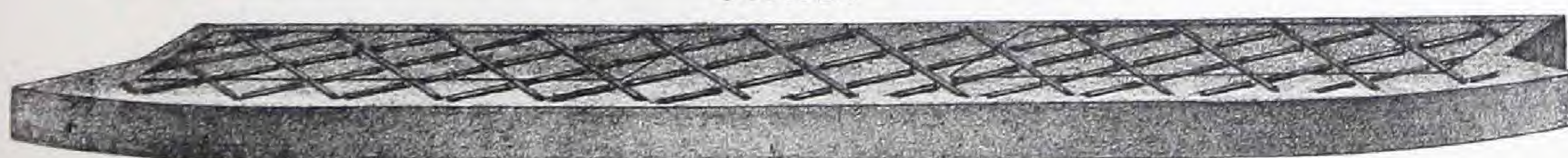


Vault Ring & Cover (hexagon).



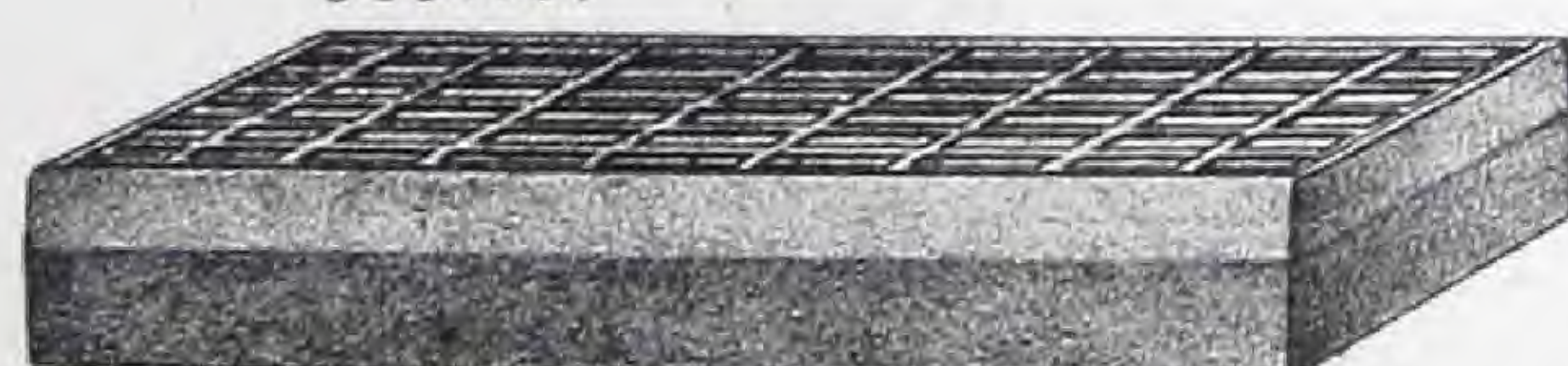
Vault Ring & Cover (Oval).

No 109.



Sewer Inlet.

No 110.



Vault Frame & Cover, (Square or oblong.)

No 113.

No 114.

No 115.



Scraper. Box Scraper.

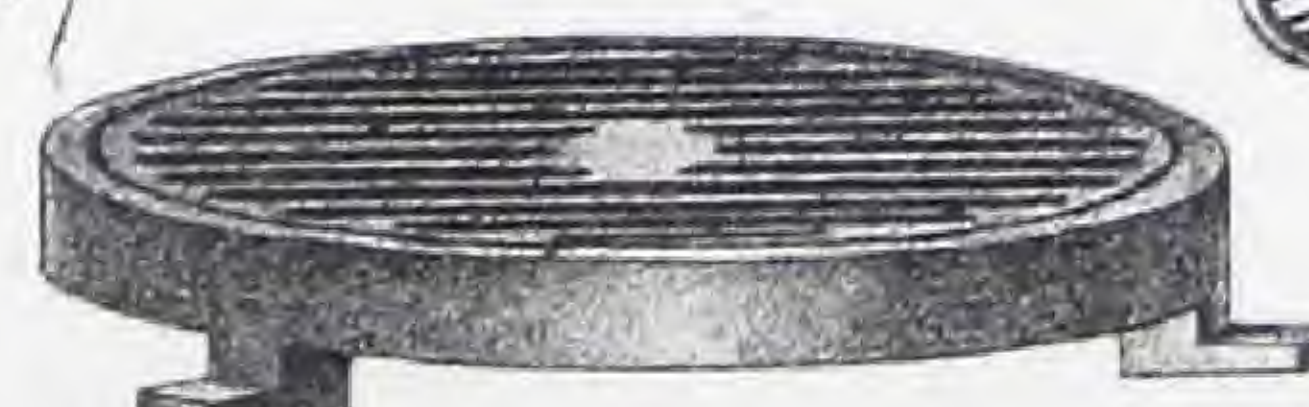


← Scrapers. →



Vault Cover.

No 111.



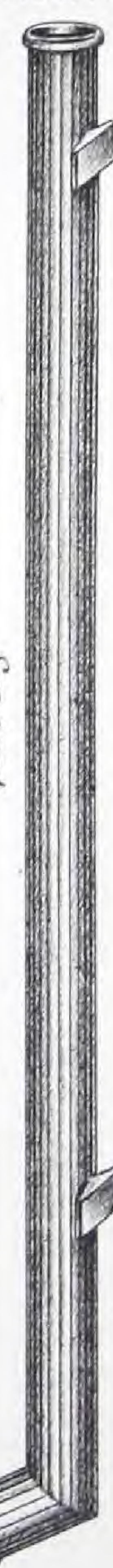
Vault Ring & Cover (Circular.)



Spout.

Spout.

Spout with offset.



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CCA

Persons in ordering will please state the "Edition" they order from.

CLASS FIFTH.

Every order for special articles must have accurate plans and dimensions attached, and no order, "same as before," will be received.

Any article for which no price is quoted on the list will be made only to special order, although such article may be shown in the illustrations.

The lists of Prices refer to Flange Pipe and Fittings only of the given dimensions. Any change in diameter of flanges, or in length from face to face, or end to end, must be made by special order; and it is to be noted, that the cost of such changes is often quite disproportionate to the price of the standard articles.

No. PLATE

1 1

CAST IRON GAS OR WATER MAIN, (BELL JOINTS.)

All Proved under Hydraulic Pressure, 300 lbs. per Square Inch.

Inside Diameter.	Lengths.	Weight per Length.	Extra Lengths.	Weight Extra Lengths.	Price per Foot.
12 inches.	9 feet.	640 lbs.	12 feet 4.24 inches.	863 lbs.	Depends on the Iron Market.
10 "	9 "	487 "	12 " 4.08 "	656 "	
8 "	9 "	355 "	12 " 3.92 "	476 "	
6 "	9 "	241 "	12 " 3.76 "	322 "	
4 "	9 "	145 "	" " " "	" " " "	
3 "	9 "	104 "	" " " "	" " " "	
2½ "	8 "	65 "	" " " "	" " " "	
2 "	6 "	40 "	" " " "	" " " "	
1½ "	6 "	30 "	" " " "	" " " "	

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INCHES.	(Old Pattern) 1½	2	(Old Pattern) 2½	3	4	6	8	10	12	Prices depend upon the Iron Market.
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	
Equal or Reducing Crosses X.	14	35	43	60	95	190	355	520	710	
Equal or Reducing Tees T.	10	25	39	45	75	150	240	355	485	
Double Bell,	"	"	"	"	"	"	"	"	"	
Elbows L.	6	15	23	30	55	120	195	275	355	
Bevil Hub, (Eighth Bend,)	"	"	"	"	"	"	"	"	"	
Reducing Pipes, Bell large or small end, as ordered,	"	"	"	"	"	"	"	"	"	
Offset Pipe,	"	"	"	"	"	"	"	"	"	
Y Branch,	"	"	"	"	"	"	"	"	"	
Cap or Plug,	"	"	"	"	"	"	"	"	"	
Sleeve,	"	"	"	"	"	"	"	"	"	

12
13
14
15

CAST IRON PIPE WITH FACED FLANGES.

Finished with Bolts and Nuts, suitable for Steam Work, proved to 300 pounds per square inch Pressure, and intended for 75 pounds per square inch Working Pressure.

Internal Diameter of Pipes.	Thickness of Iron of Body.	Outside Diameter of Flanges.	Diameter of Centre of Holes for Bolts.	Number of Bolts.	Diameter of Bolts.	Length of each piece of Pipe.	Price per foot, for whole lengths, with Bolts, finished.	Price of L's with Bolts, finished.	Price of T's with Bolts, finished.	Price of X's with Bolts, finished.
3 inches.	.328 inches.	7½ inches.	6 inches.	4	½ inch.	8 feet.				
3½ "	.341 "	8 "	6½ "	4	⅞ "	8 "				
4 "	.354 "	9 "	7¼ "	*5	⅞ "	8 "				
5 "	.380 "	10 "	8⅜ "	6	⅞ "	8 "				
6 "	.406 "	11 "	9⅜ "	6	⅞ "	9 "				
8 "	.458 "	13½ "	11¾ "	8	⅞ "	9 "				
10 "	.510 "	16 "	14 "	10	¾ "	9 "				
12 "	.527 "	19 "	16¾ "	10	⅞ "	9 "				
16 "	.667 "	23½ "	21 "	14	⅞ "	9 "				

* The 4 inch Pipe Flanges can have 4 ⅝ Bolts in place of the tabular number; but the joint will be better if the number and dimensions given are followed.

Pipes of special lengths, or with special outlets, Elbows, T's, X's or Flanges, to dimensions, made to order.

CLASS FIFTH.—Continued.

No. PLATE

12 1

13

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15

HEAVY CAST IRON PIPE WITH FACED FLANGES.

Finished with Bolts and Nuts, suitable for Steam Work; proved to 300 pounds per square inch Pressure, and intended for 100 pounds per square inch Working Pressure.

Internal Diameter of Pipe.	Thickness of Iron of Body.	Outside Diameter of Flanges.	Diameter of Centre of Holes for Bolts.	Number of Bolts.	Diameter of Bolts.	Length of each piece of Pipe.	Price per foot, for whole lengths, with Bolts, finished.	Price of L's with Bolts, finished.	Price of T's with Bolts, finished.	Price of X's with Bolts, finished.
3 inches.	.383 inches.	7½ inches.	6 inches.	4	$\frac{9}{16}$ inch.	8 feet.	\$1.00	Same Patterns and Prices as for 75 lbs. Pressure.	Same Patterns and Prices as for 75 lbs. Pressure.	Same Patterns and Prices as for 75 lbs. Pressure.
3½ "	.398 "	8 "	6½ "	*5	$\frac{9}{16}$ "	8 "	1.20			
4 "	.414 "	9 "	7¼ "	*5	$\frac{9}{16}$ "	8 "	1.40			
5 "	.444 "	10 "	8½ "	6	$\frac{9}{16}$ "	8 "	1.80			
6 "	.474 "	11 "	9½ "	6	$\frac{9}{16}$ "	9 "	2.15			
8 "	.535 "	13½ "	11¼ "	8	$\frac{9}{16}$ "	9 "	3.20			
10 "	.596 "	16 "	14 "	10	$\frac{9}{16}$ "	9 "	4.40			
12 "	.657 "	19 "	16½ "	10	$\frac{9}{16}$ "	9 "	5.90			
16 "	.778 "	23½ "	21 "	14	$\frac{1}{2}$ "	9 "	9.00			

* The 3½ Pipe Flange can have 4 $\frac{5}{8}$ Bolts, and the 4 inch Pipe Flange 4 $\frac{1}{2}$ Bolts; but the joint is not likely to be so good as when the tabular number and dimensions are used.

Pipes of special lengths, or with special outlets, Elbows, T's, X's or Flanges, to dimensions, made to order.

PLATE

2 TABLE OF DIMENSIONS OF FLANGED AND BELL ELBOWS, TEES AND CROSSES.

PLATE

20 3

21

22

23

24

STOP VALVES, DOUBLE WEDGE VALVES, INSIDE OR OUTSIDE SCREWS, BELL OR FLANGED ENDS.

(Large Sizes, Geared, as shown in plate 24, if ordered, price extra,) suited for 75 pounds Working Pressure.

Internal Diameter of Valve.	All Iron.		Brass Faces to Valves and Brass Nuts.		All Bearings or Screw Surfaces of Brass.		Dimensions.		
	Inside Screws.	Outside Screws.	Inside Screws.	Outside Screws.	Inside Screws.	Outside Screws.	Face to Face of Flanges.	Diameter of Flanges.	End to end of Pipes, when laid in bell of Valves.
3 inches.	\$16.25	\$18.00	\$17.00	\$19.00	\$18.00	\$20.00	Inches.	Inches.	Inches.
4 "	20.00	22.00	21.00	23.00	22.50	24.75	13¼	7½	6¼
6 "	29.75	33.00	31.50	35.00	34.00	37.50	14¼	9	7
8 "	43.00	47.50	46.00	50.50	50.00	55.00	15¼	11	8
10 "	62.00	69.00	66.00	73.00	72.00	80.00	17¼	13½	9¼
12 "	86.00	95.00	91.00	100.00	100.00	110.00	19	16	10½
16 "	148.50	144.00	155.50	171.00	170.00	187.00	20½	19	12
20 "	222.00	244.00	231.00	254.00	250.00	275.00	24¼	23¼	15¼
							27	28¼	16¼

CLASS FIFTH.—*Continued.*

FIRE PLUGS AND CASES.

The nozzle on both 3 and 4 inch are the same, both having inside screw (with cast iron cap) suited for standard 9 inch hose. If other nozzles are wanted, they will be made to special order.

The ordinary length of Fire Plugs is for four feet from level of centre of roadway to that of centre of main, but they are made to order for any depth of line that may be required.

They are furnished complete, with hose nozzle and caps, and internal waste.

	3 inch (No. 28.)	4 inch (No. 28.)	4 inch subway (No. 30.)
Fire Plugs,	\$18.00	\$28.00	\$28.00
Add for each foot of increased length,	1.00	1.50	1.50
	3 inch (No. 26.)	4 inch (No. 25.)	4 inch subway (No. 27.)
Cases for Fire Plugs,	\$10.00	\$15.00	\$10.00
Fire Hydrant Valve, for Factories, Railroad Depots, &c., with Nut or Wheel Valve 2½ inches,			\$9.00
Iron Foot Valve, 2 in., \$7.20; 2½ in., \$9.60; 3 in., \$12.50; 3½ in., \$14.95; 4 in., \$17.75; 5 in., \$24.00; 6 in., \$30.65. See CLASS SECOND.			
Strainers, Galvanized Bossed Flange; diameter of Tube and of Flange as ordered. See CLASS FIRST.			
Strainers, Galvanized iron, 3 inches, 4 inches, 5 inches, 6 inches, 8 inches. See CLASS SECOND.			
Expansion Joints, 3 inches, 4 inches, 5 inches, 6 inches, 8 inches. See CLASS SECOND.			
Water Tank Valve, with Strainer, 4 inches only. See CLASS SECOND.			

GAS STOP VALVES, DOUBLE FACE, INSIDE SCREW, ALL IRON, BELL OR FLANGED ENDS.

Internal Diameter of Valve.	PRICE.	DIMENSIONS.		
		Face to Face of Flanges.	Diameter of Flanges.	End to end of Pipes when laid in bell of Valves.
		Inches.	Inches.	Inches.
3 inches,	\$15.00	8	7½	5
4 "	22.00	9	9	5½
6 "	33.00	10	11	6½
8 "	47.00	12	13½	8
10 "	59.00	14	16	9
12 "	74.00	16	19	10
16 "	114.00	18	23½	12
20 "	193.00	20	28½	14½
24 " . . . . .	....	22	33	18
30 " . . . . .	....	..	..	..

Hinge Valve, bell end, same price as Double Wedge Valve, all iron.
 " flange end, " " "

RAILROAD STATION WATER COLUMNS.

Price of 6 inch Swing Joint, without ornaments or arm,	\$45 00
" 6 inch Station Plug, ready for connections,	75 00
" Column, with Bed-plate; holding-down bolts and washers; Connecting Pipes; Swing Joint, with galvanized iron pipe arm 9 feet long; Station Plug; complete, ready to set up as drawn,	475 00

The foundation needs about 14 yards excavation and 4 M of brickwork.

新刊
古今
圖書集成
卷之
一百一
十五

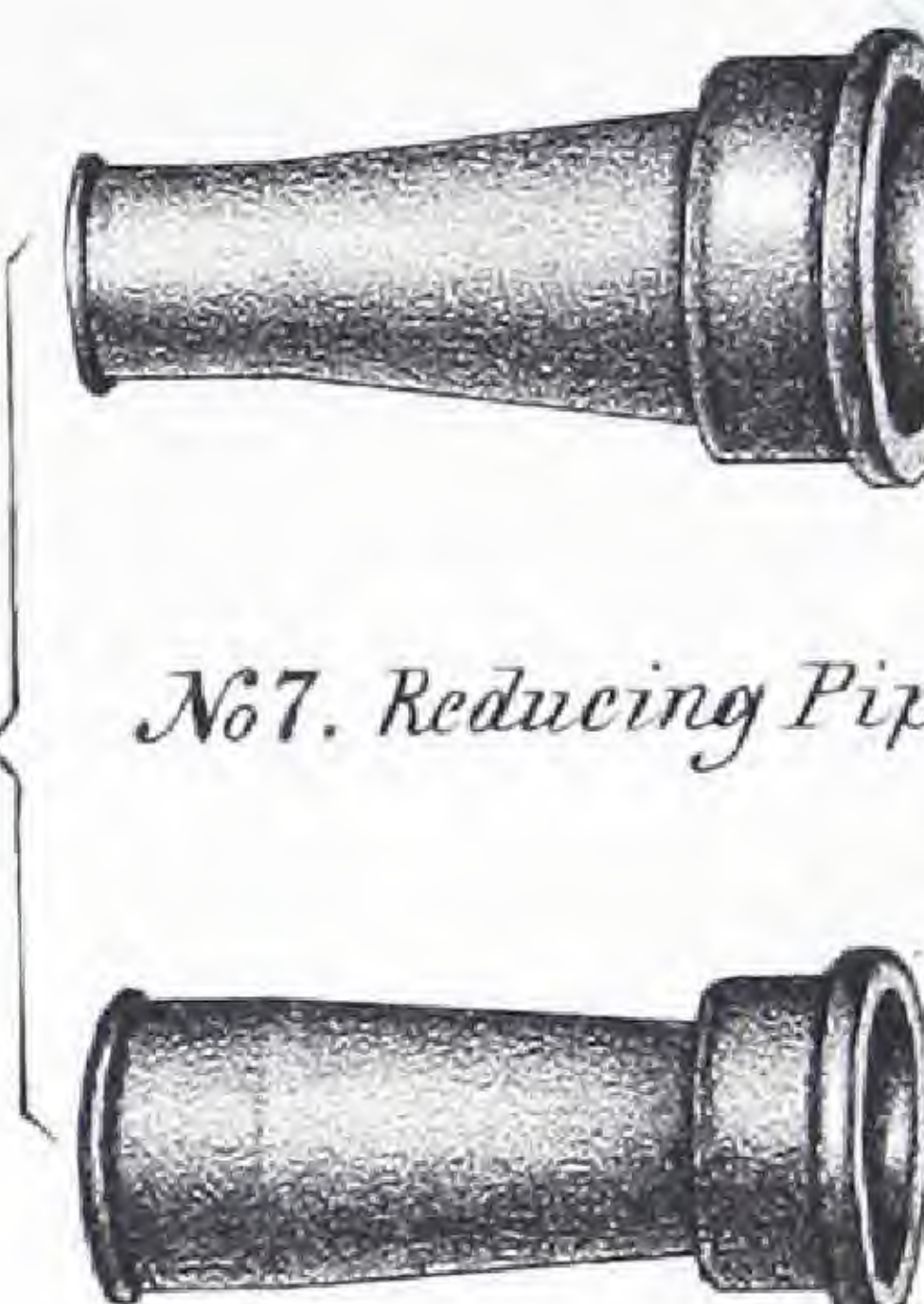
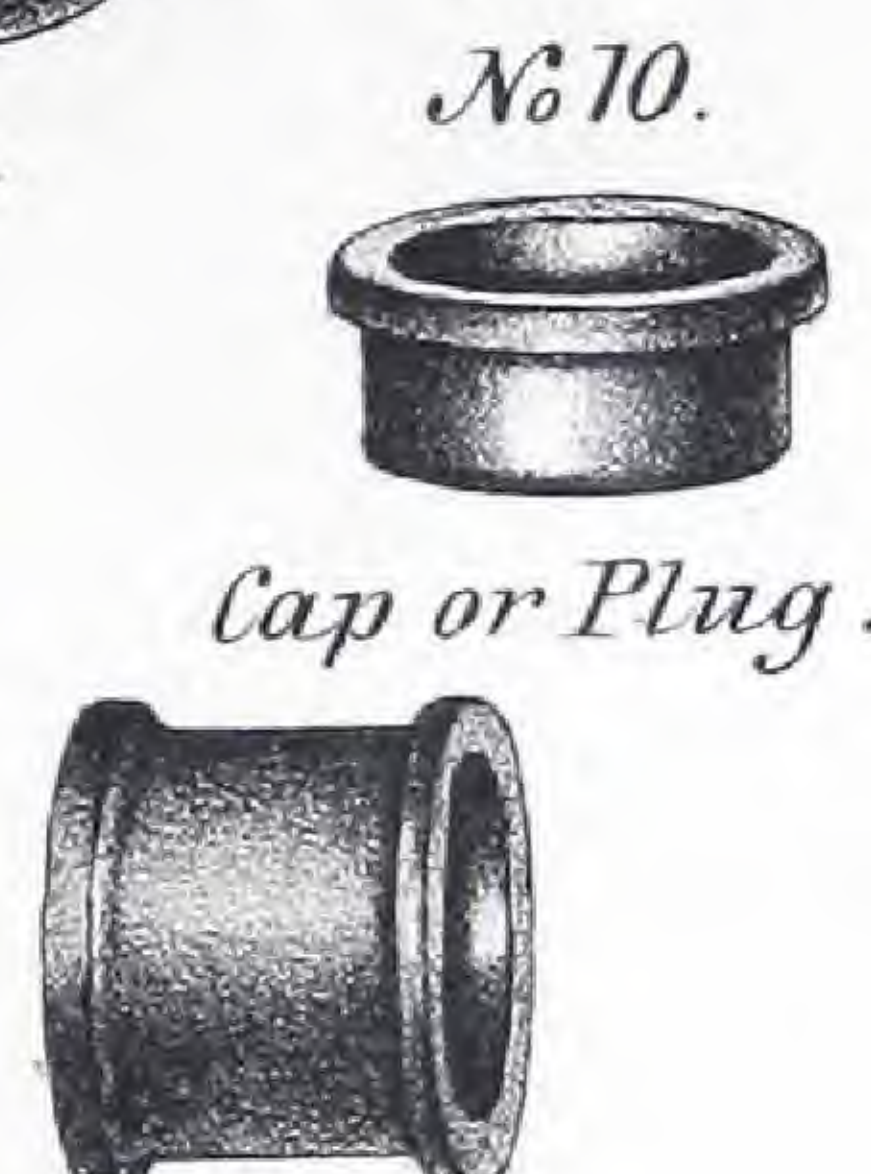
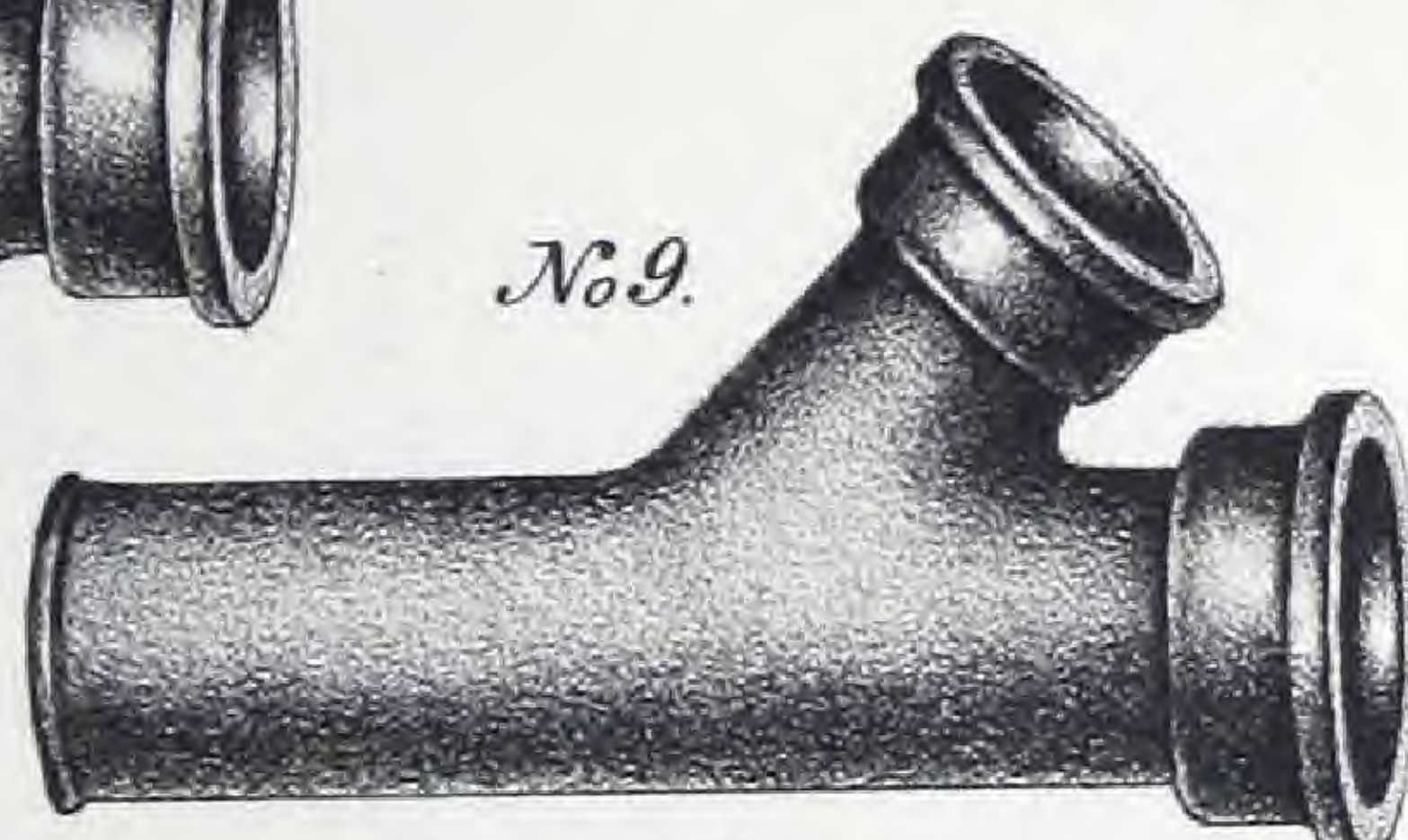
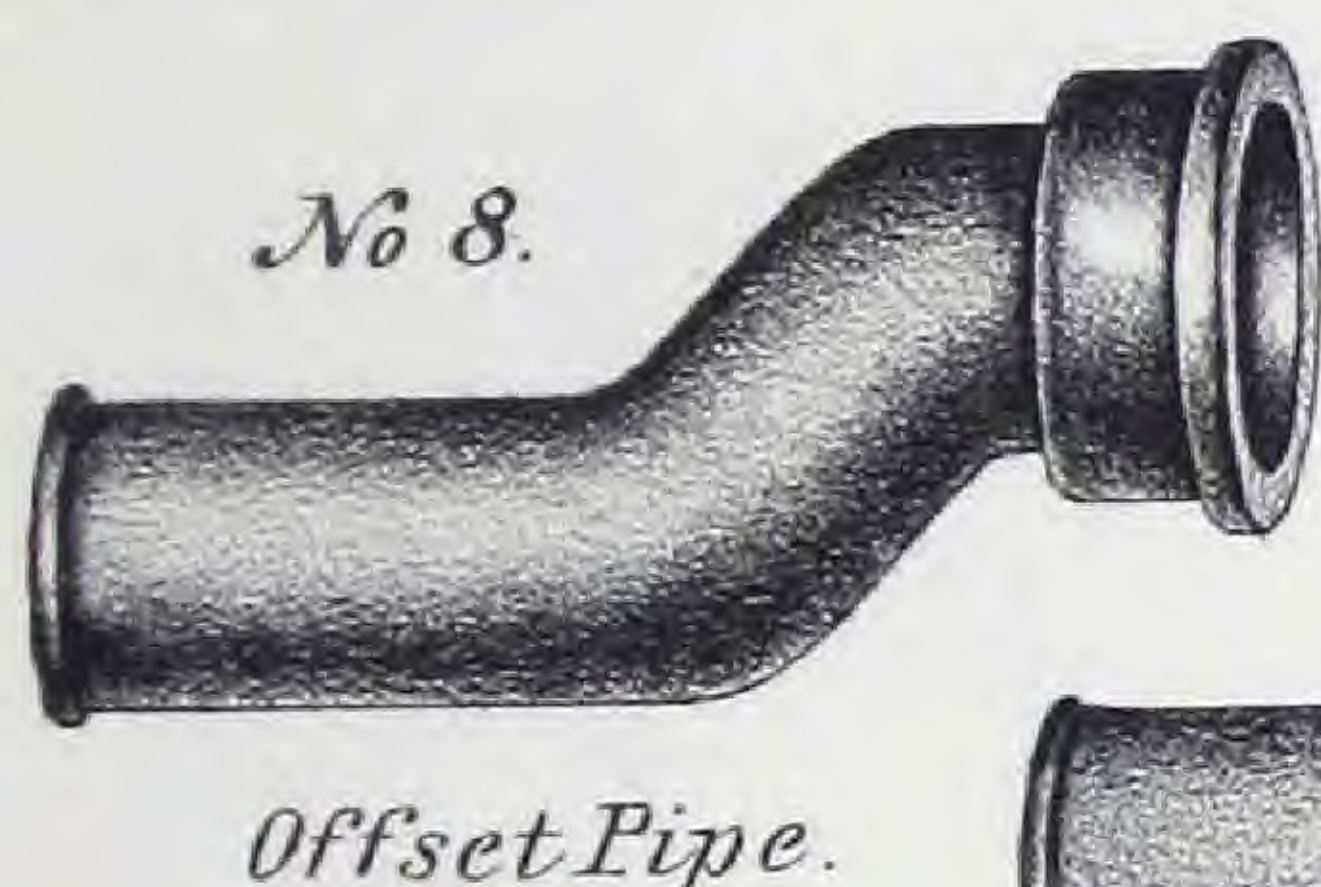
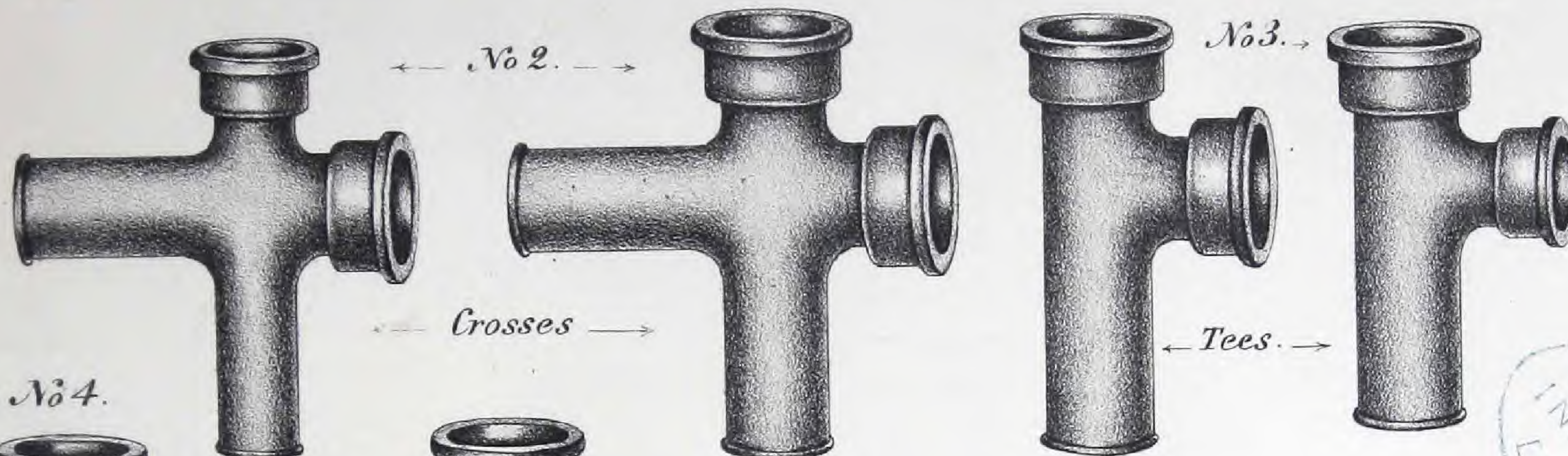
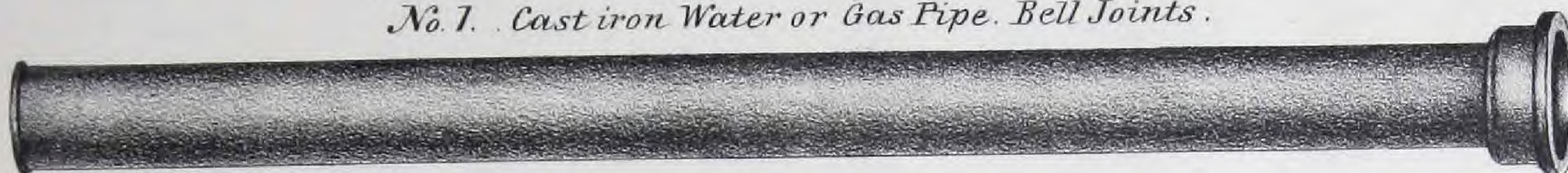
MORRIS, TASKER & CO'S ILLUSTRATED CATALOGUE.

10th EDITION

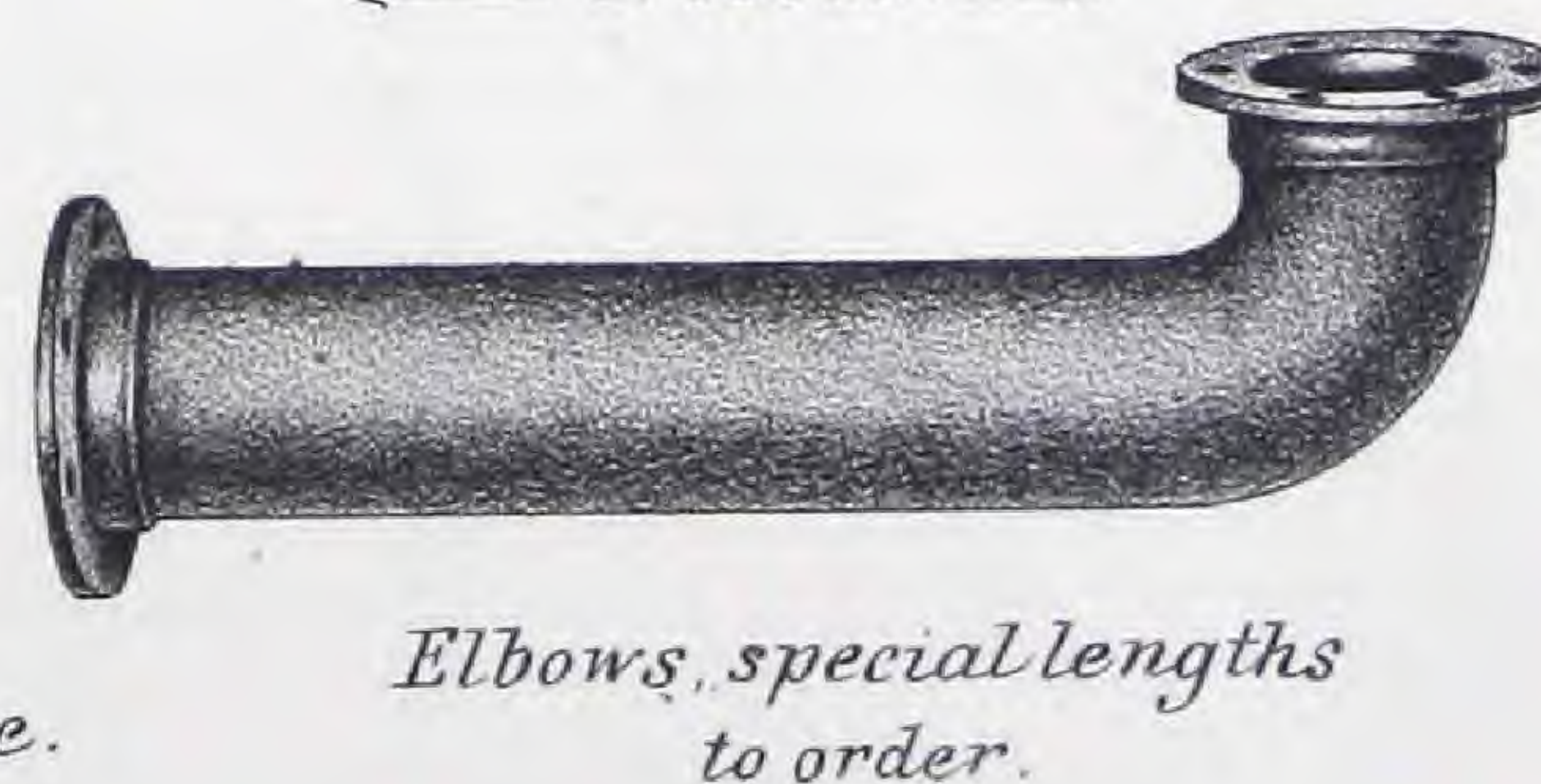
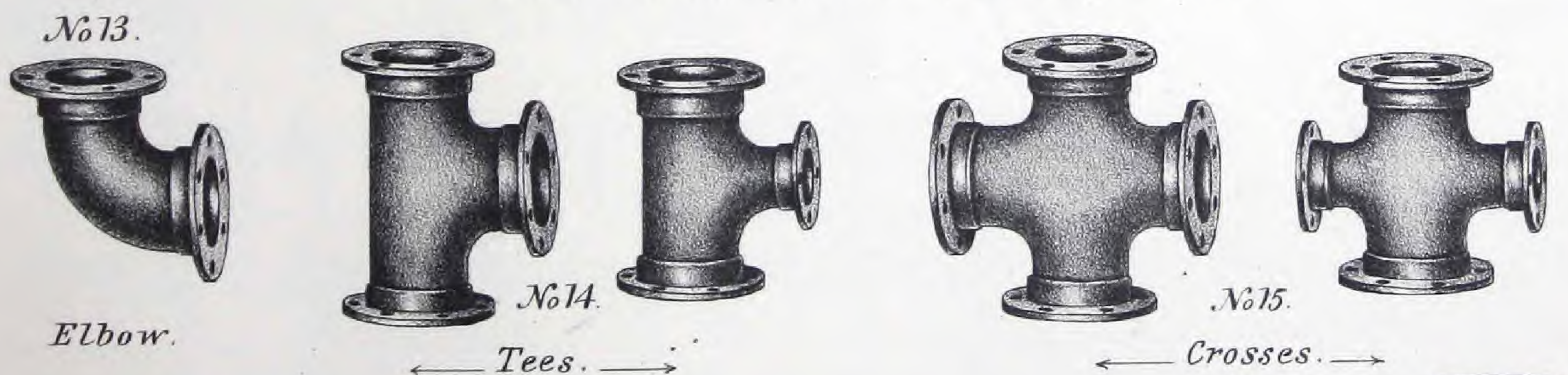
CLASS FIFTH.

Plate 1.

No. 1. Cast iron Water or Gas Pipe. Bell Joints.



Cast iron Steam or Water Pipe, Flange Joints.



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CCA

MORRIS, TASKER & CO'S ILLUSTRATED CATALOGUE.

10th EDITION.

CLASS FIFTH.

Plate 2.

DIMENSIONS of FLANGED ELBOWS, TEES & CROSSES, center to face of Flange

6 inches	7 inches	7½ inches	8 inches	9 inches	10 inches	11 inches	13½ inches	16 inches	19 inches	23½ inches	28½ inches
4 ¾ "	5 ½ "	6 "	6 ½ "	7 ½ "	8 ¾ "	9 ¾ "	11 ¾ "	14 "	16 ¾ "	21 "	25 ¾ "
4	4	4	5	5	6	6	8	10	10	14	16
½ "	½ "	¾ "	¾ "	¾ "	¾ "	¾ "	¾ "	¾ "	¾ "	¾ "	1 inch
2	2 ½	3	3 ½	4	5	6	8	10	12	16	20
2	2 ½	3	3 ½	4	5	6	8	10	12	16	20
2 ½	3	3 ½	4	5	6	8	10	12	16	20	20
3	3 ½	4	5	6	8	10	12	16	20	20	20
3 ½	4	5	6	8	10	12	16	20	20	20	20
4	5	6	8	10	12	16	20	20	20	20	20
5	6	8	10	12	16	20	20	20	20	20	20
6	8	10	12	16	20	20	20	20	20	20	20
8	10	12	16	20	20	20	20	20	20	20	20
10	12	16	20	20	20	20	20	20	20	20	20
12	16	20	20	20	20	20	20	20	20	20	20
16	20	20	20	20	20	20	20	20	20	20	20
20	20	20	20	20	20	20	20	20	20	20	20

DIMENSIONS of BELL JOINT ELBOWS, TEES & CROSSES

the above dimensions give the Length from center to bottom of bell or end of spiggots

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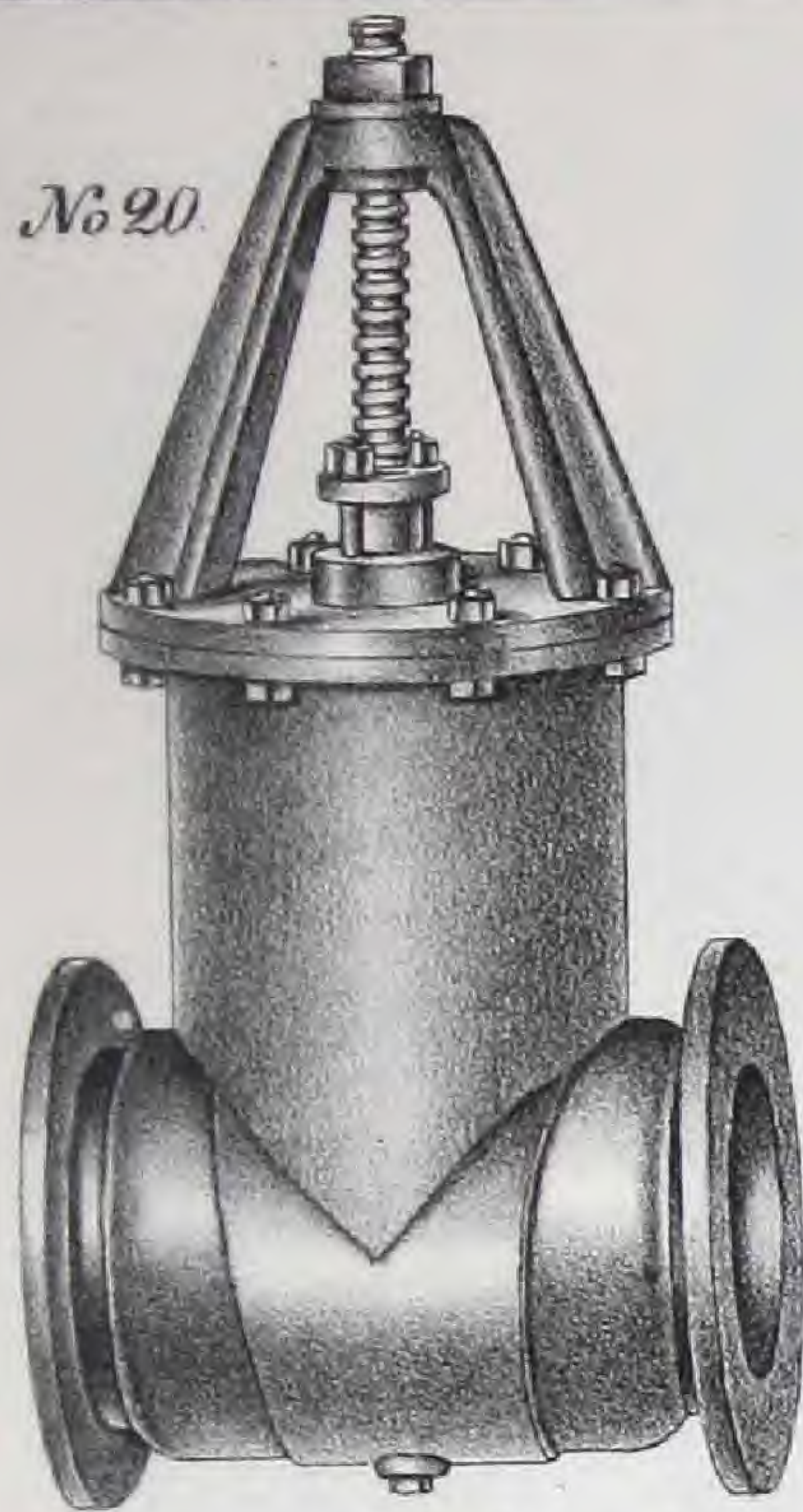
CCA

MORRIS, TASKER & CO'S ILLUSTRATED CATALOGUE.

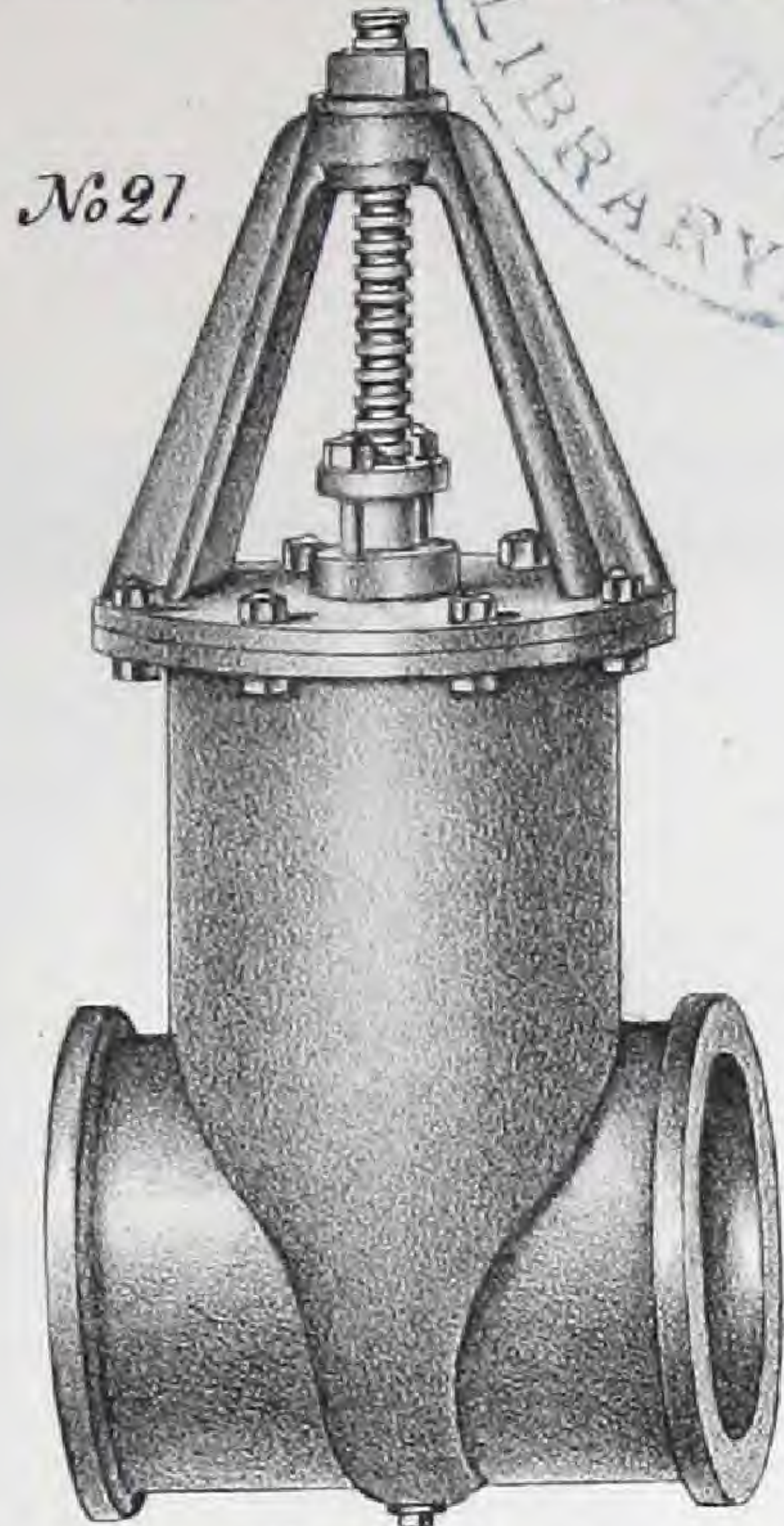
10th EDITION

CLASS FIFTH.

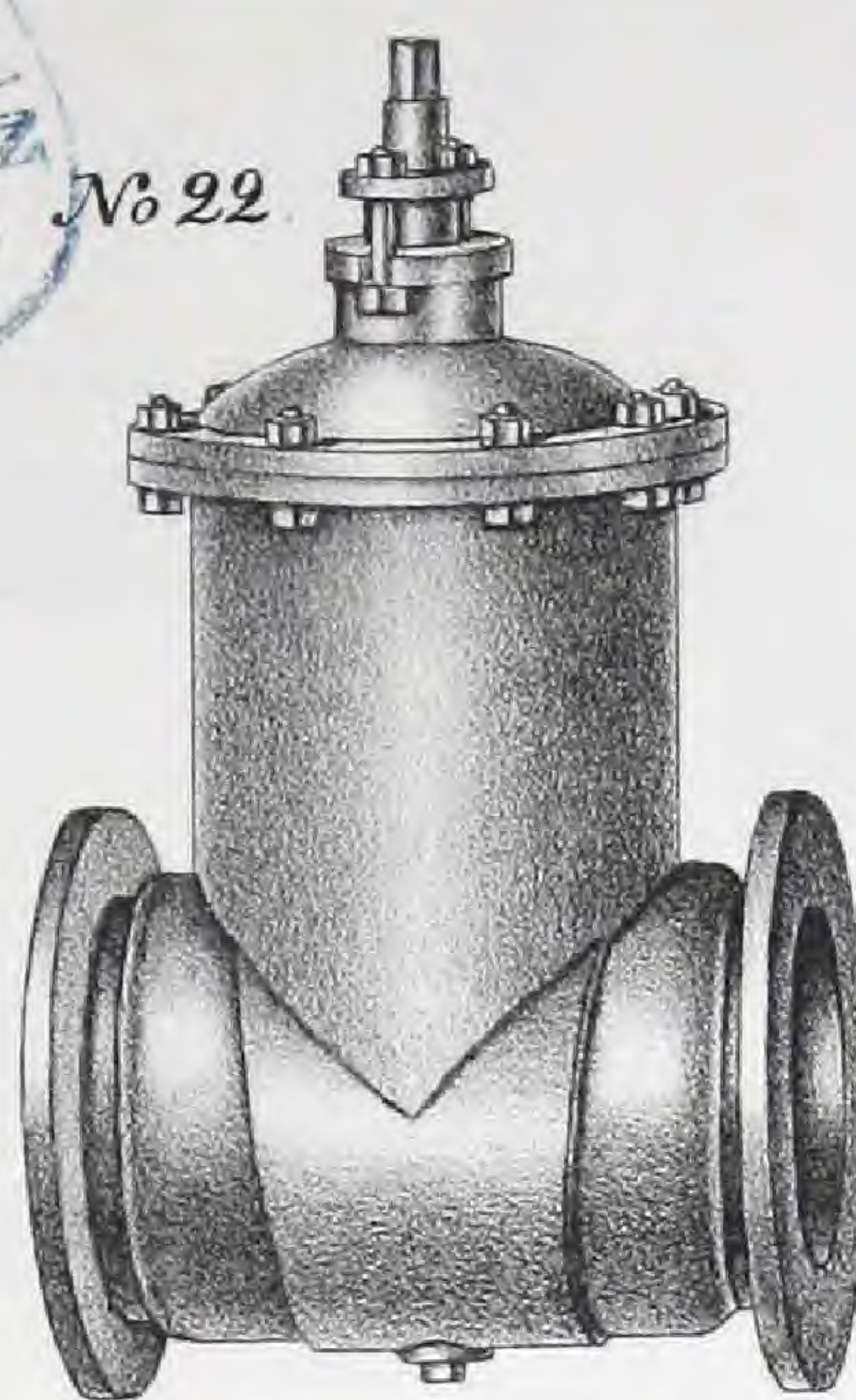
Plate 3.



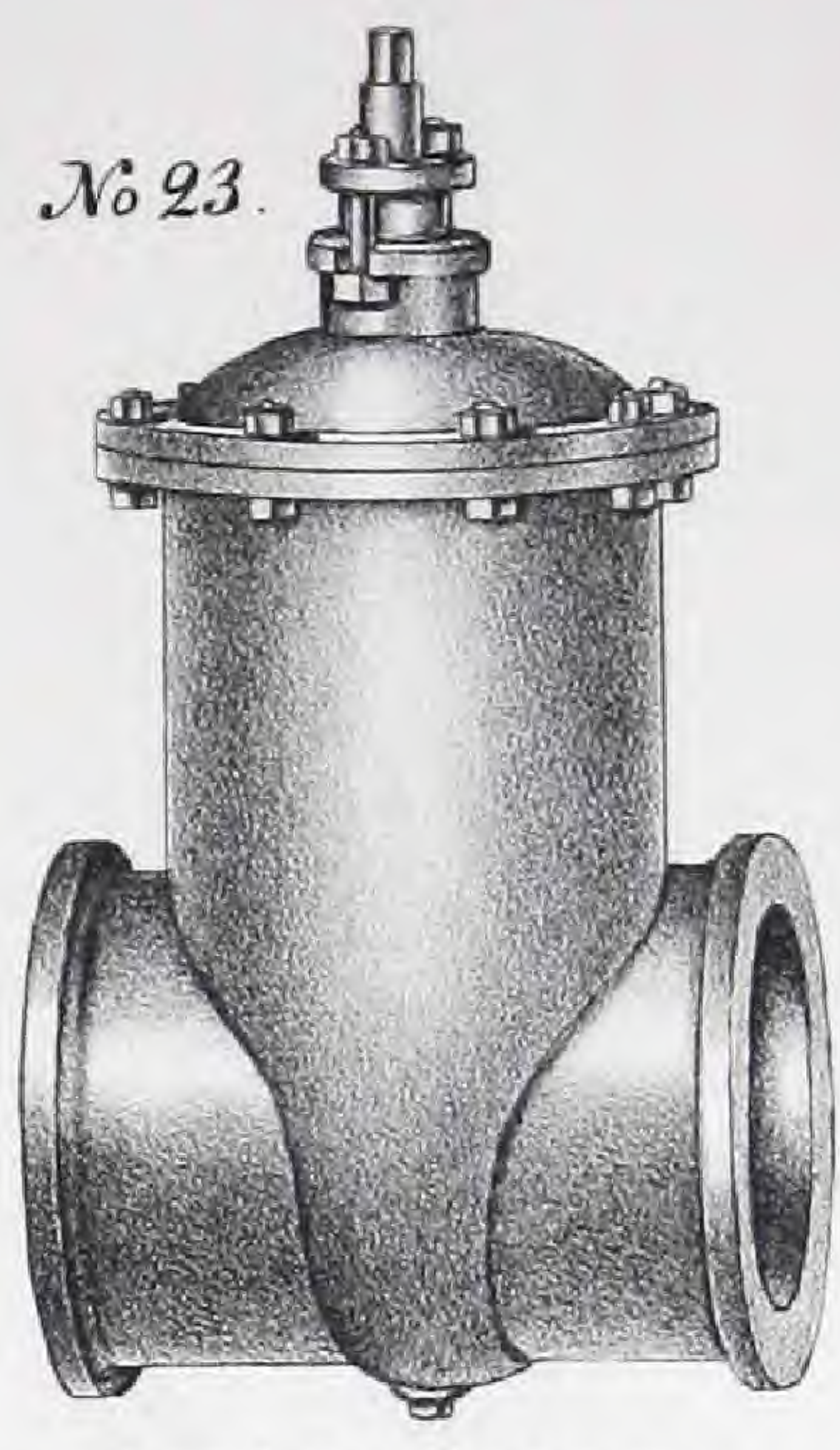
Stop Valves, outside Screw.
Flange ends.



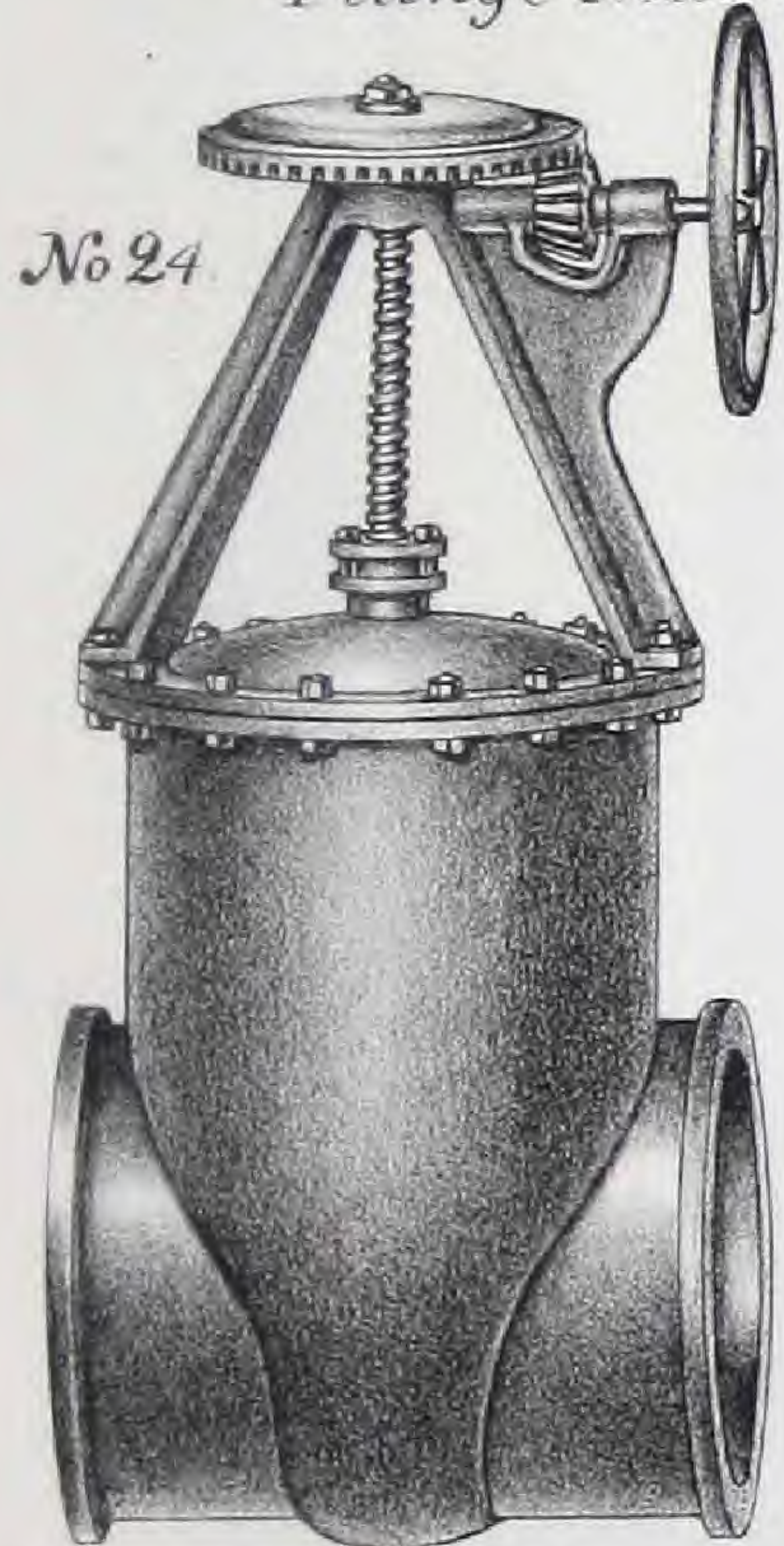
No. 25.



Stop Valves,
Flange ends.



inside Screw.
Bell ends



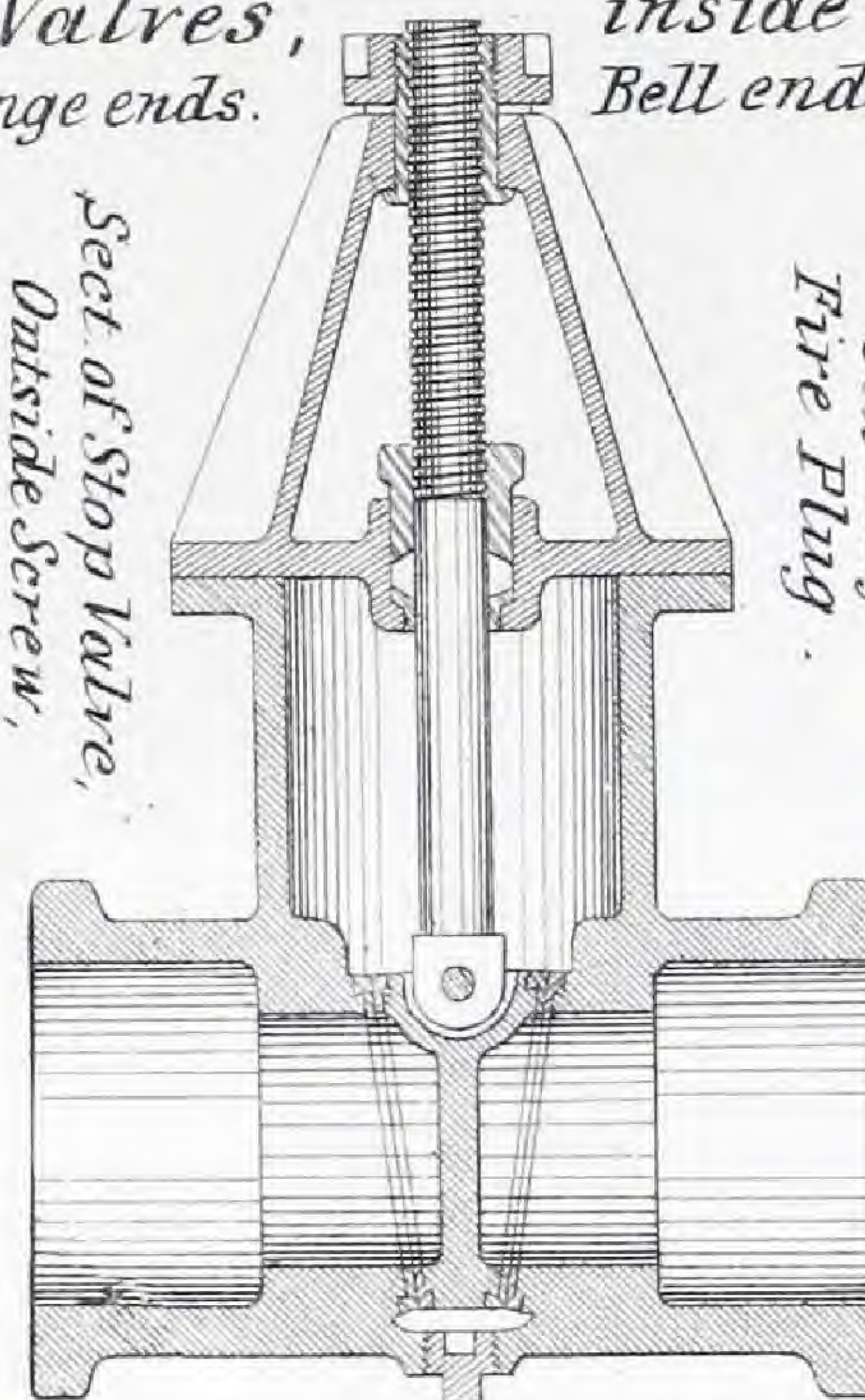
Stop Valve with Gearing.
(20 inch & upward.)



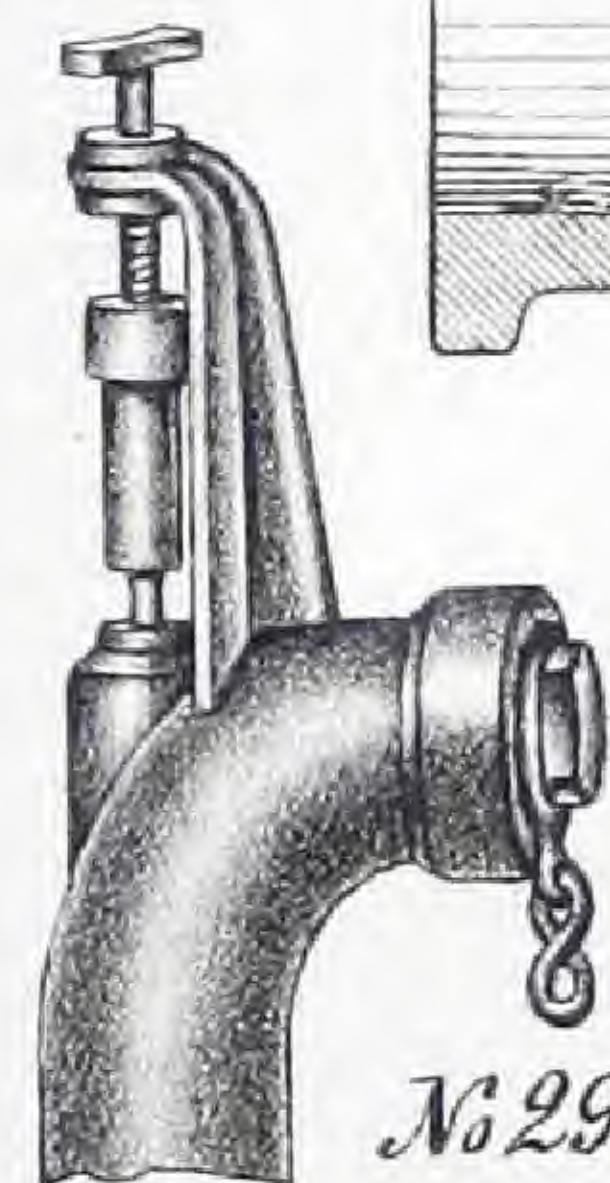
4 inch Fire Plug Case.



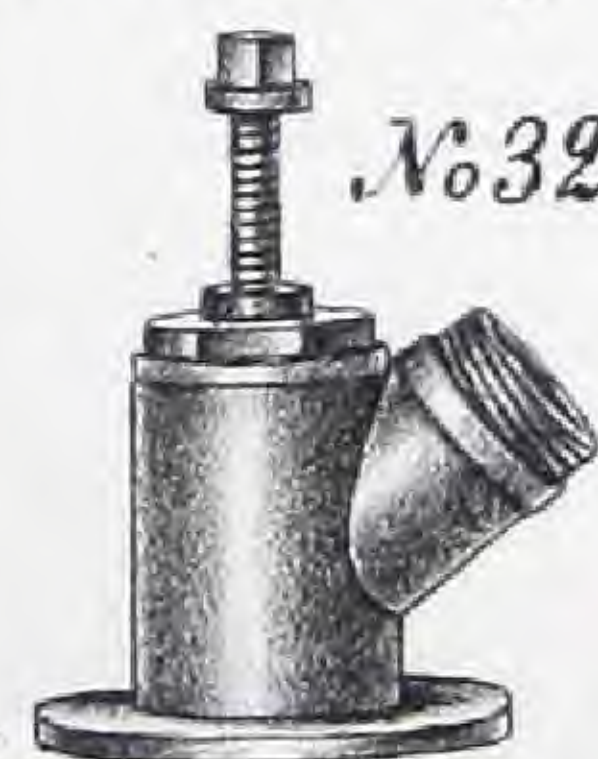
4 inch Fire Plug.



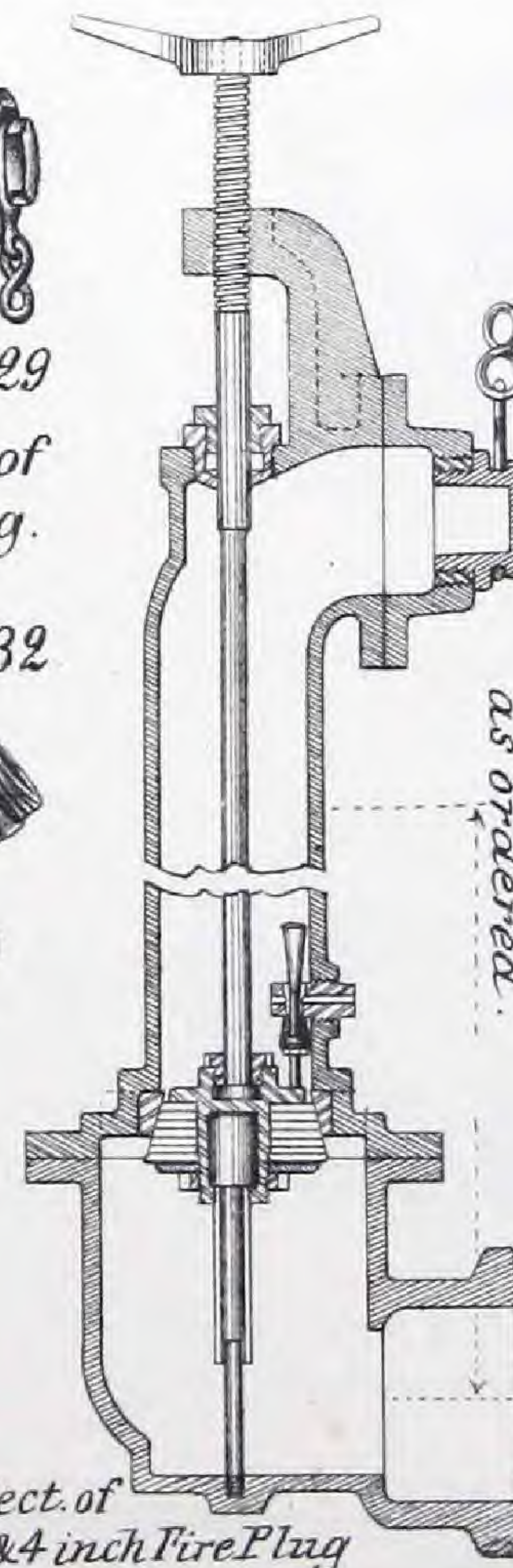
Sect. of Stop Valve,
Outside Screw,
Bell ends.



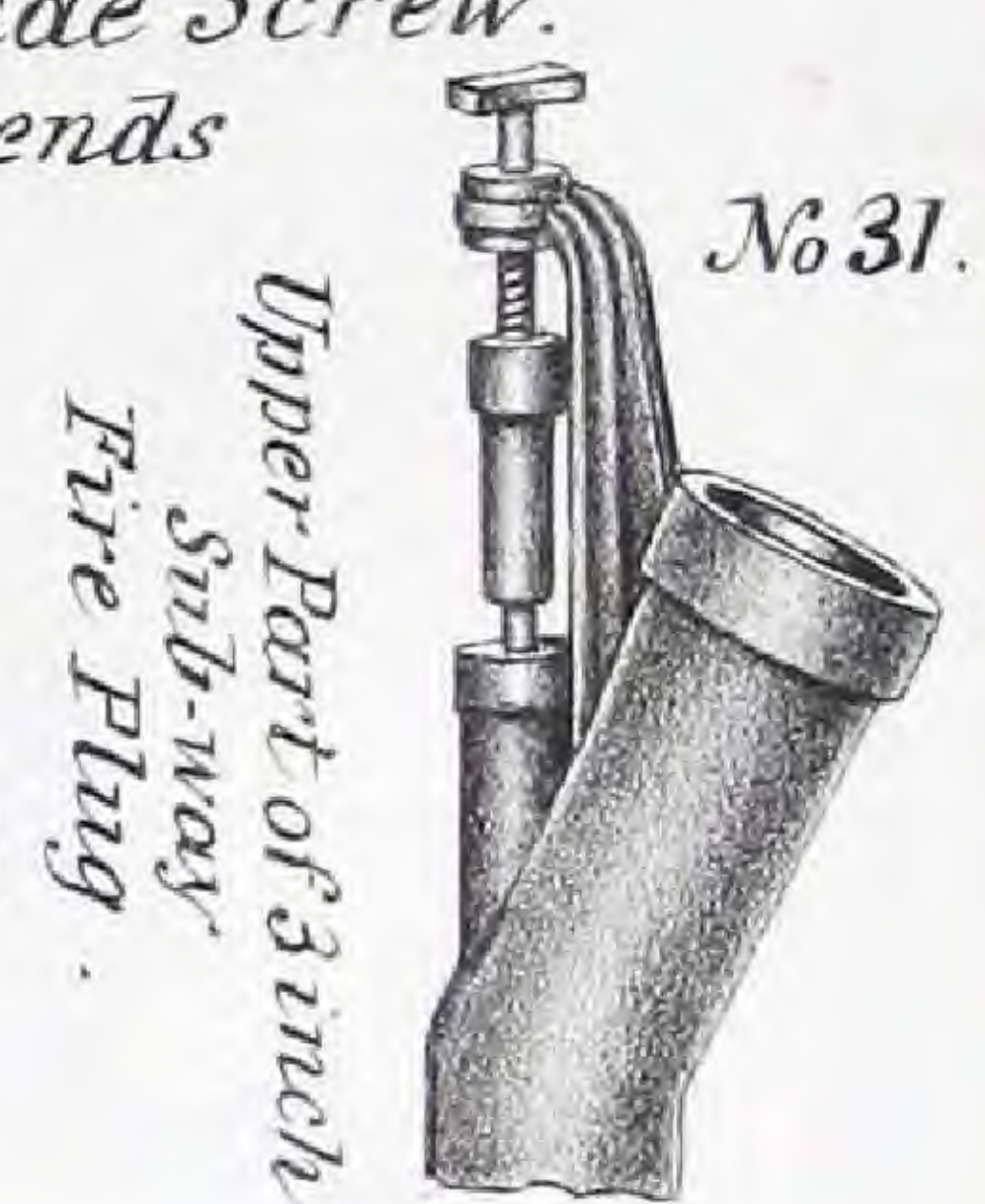
Upper part of
3 in. Fire Plug.



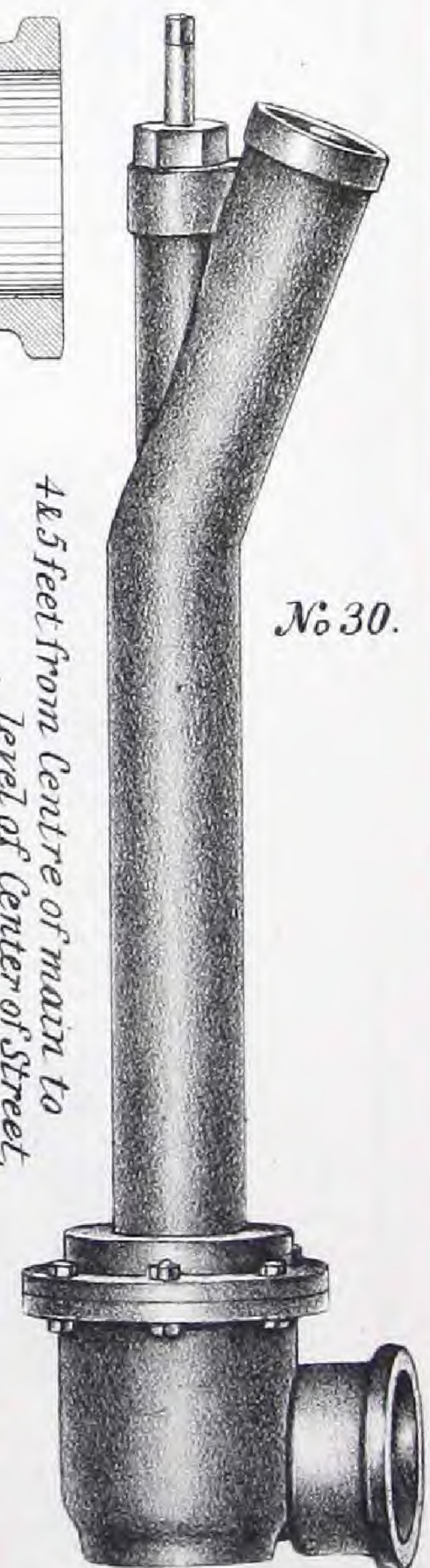
Hydrant
Valve.



Sect. of
3 & 4 inch Fire Plug



Upper Part of 3 inch
Sub-way
Fire Plug.

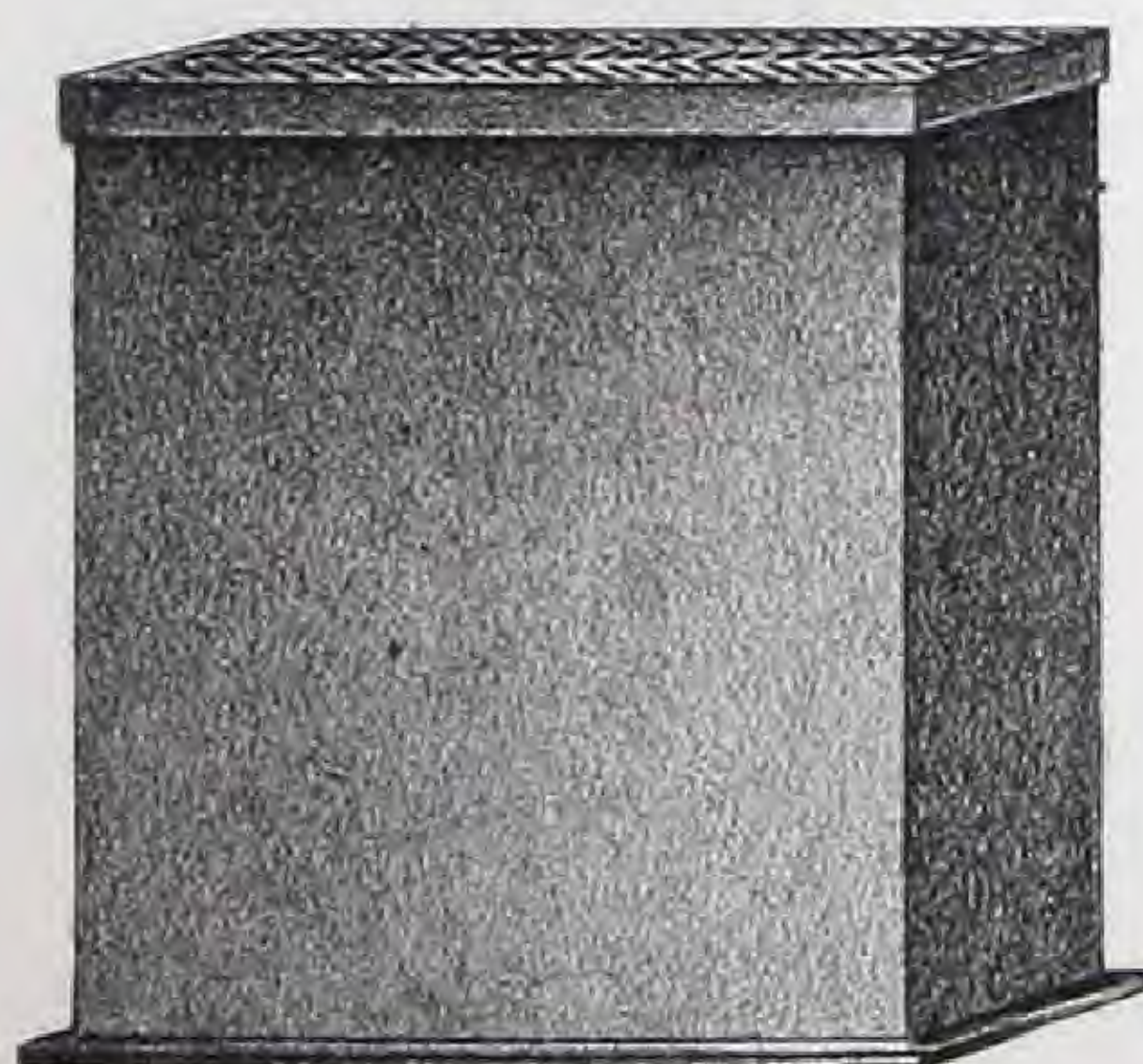


4 inch Sub-way
Fire Plug.

4 & 5 feet from Centre of main to
level of Center of Street,
as ordered.



3 inch Fire Plug Case.



Case for No. 30.



MORRIS, TASKER & CO'S ILLUSTRATED CATALOGUE.

10th EDITION

CLASS FIFTH.

Plate 4.

No 34.



Iron Foot Valve
(Flange)
See Class II.

No 35.



Strainer.
See Class II.

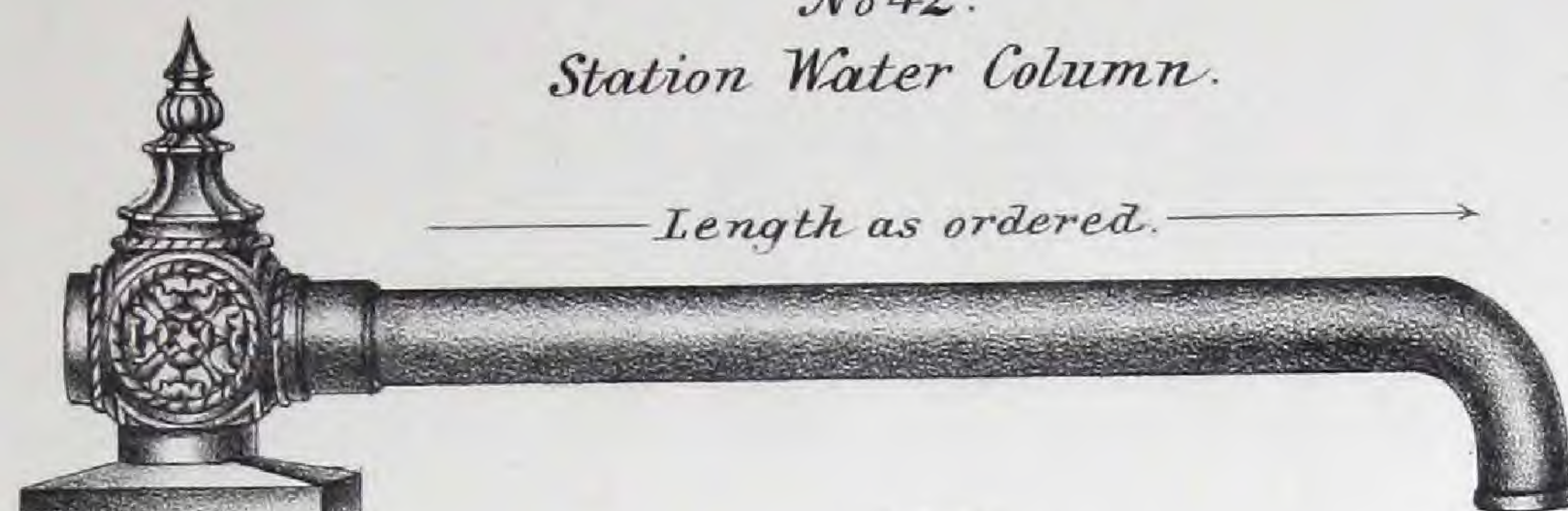
No 36



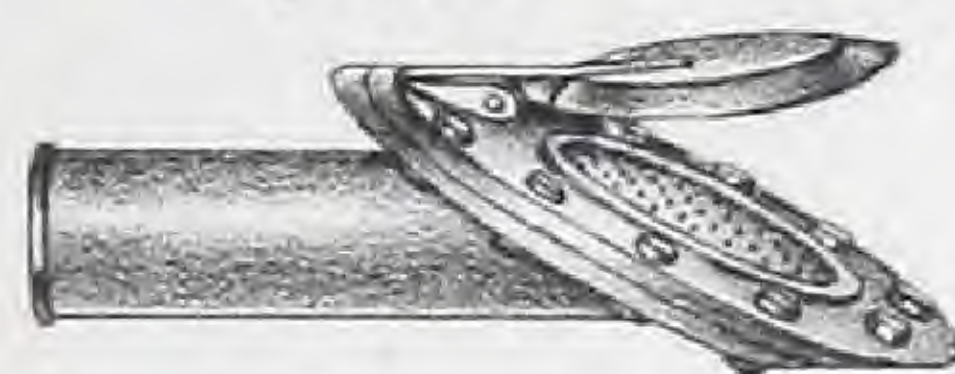
Expansion Joint, cast iron
with Brass Sleeve,
flange ends.
See Class II.

No 42.
Station Water Column.

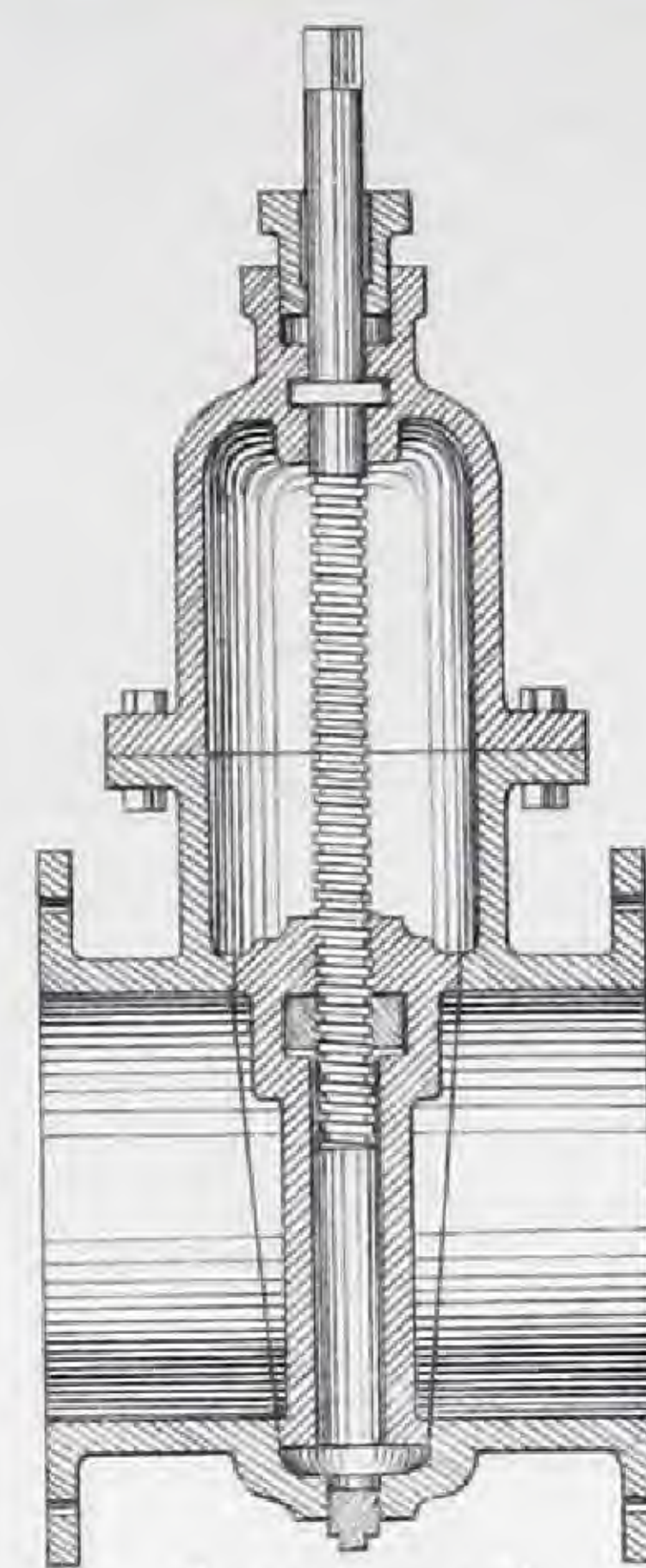
Length as ordered.



No 37.

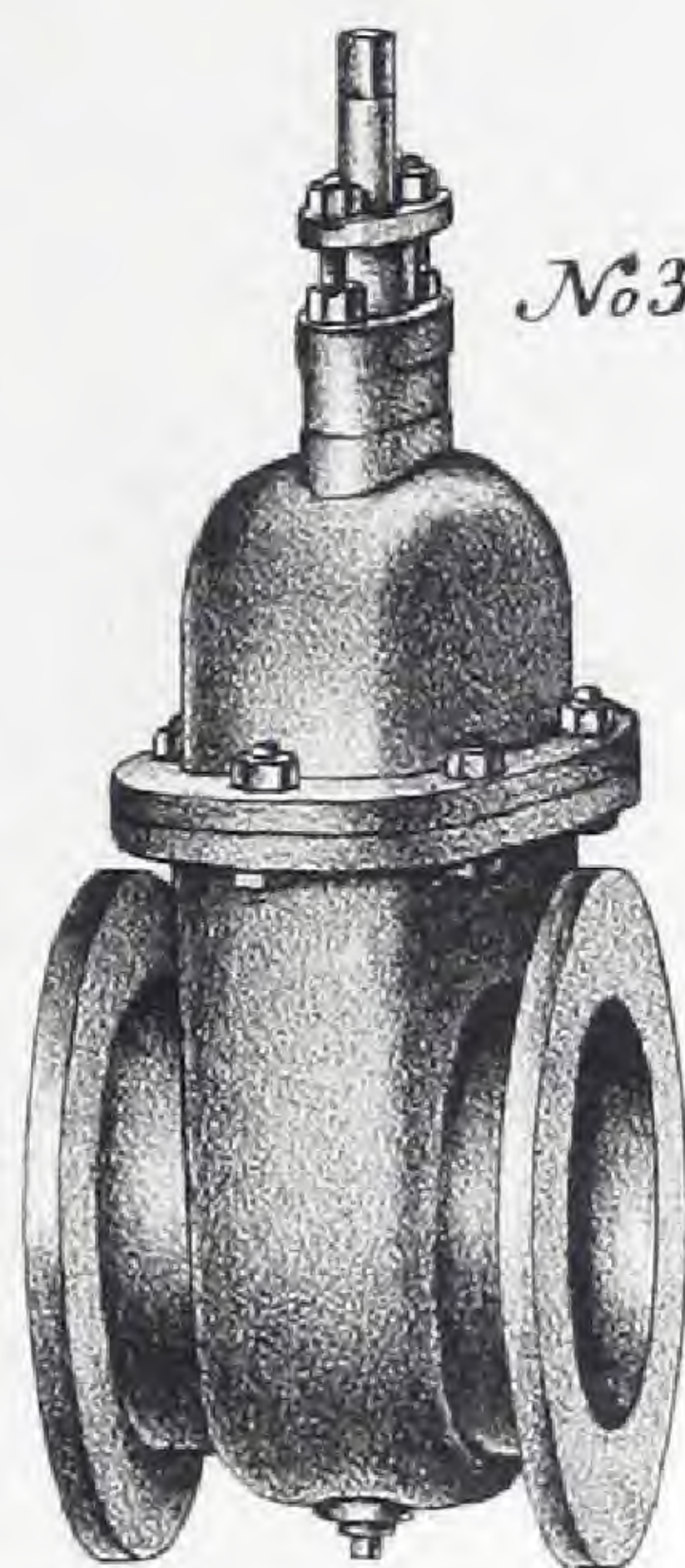


Water Tank Valve with Strainer.
(see Class II.)



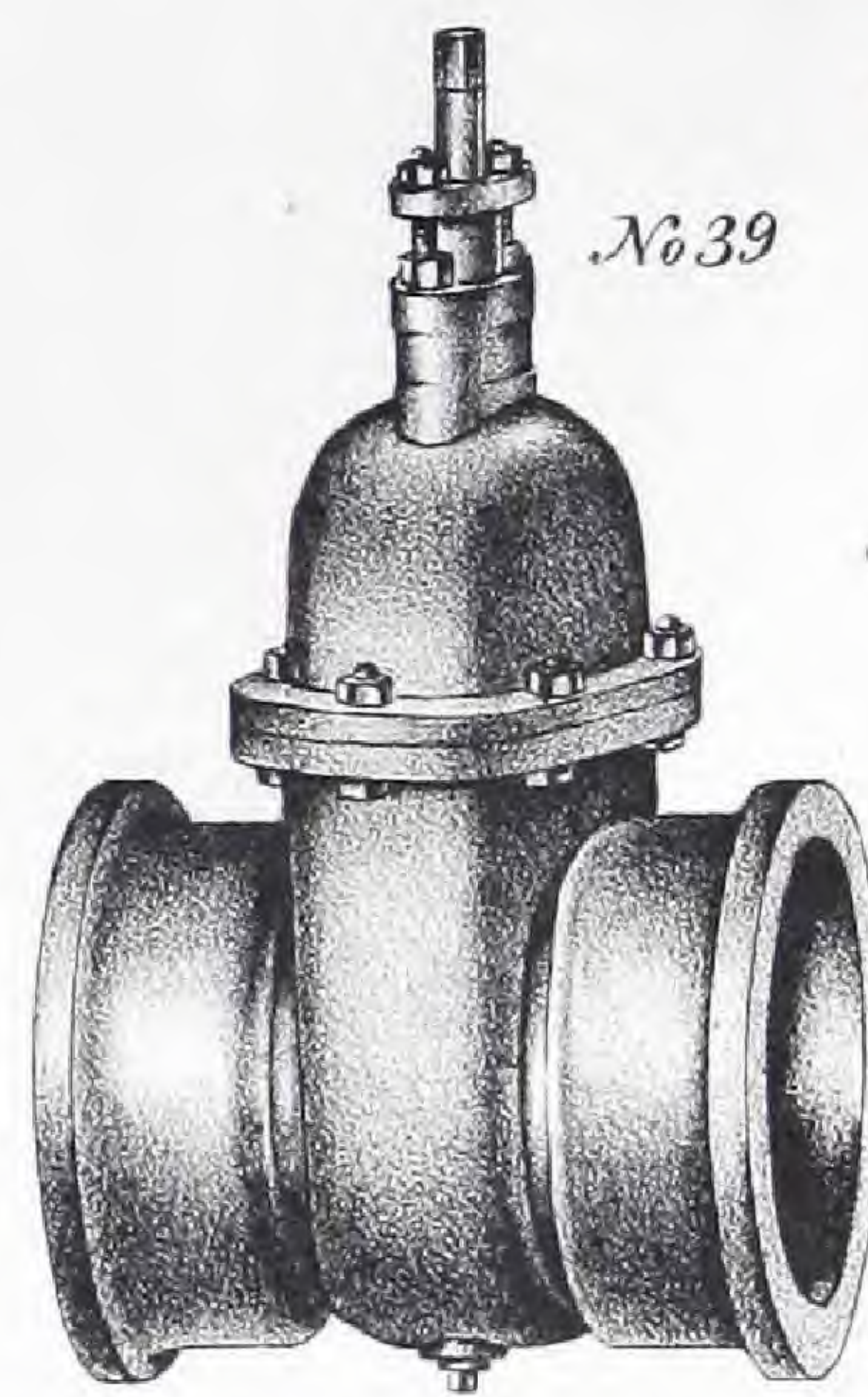
Section of
Double Face Valve.

No 38.



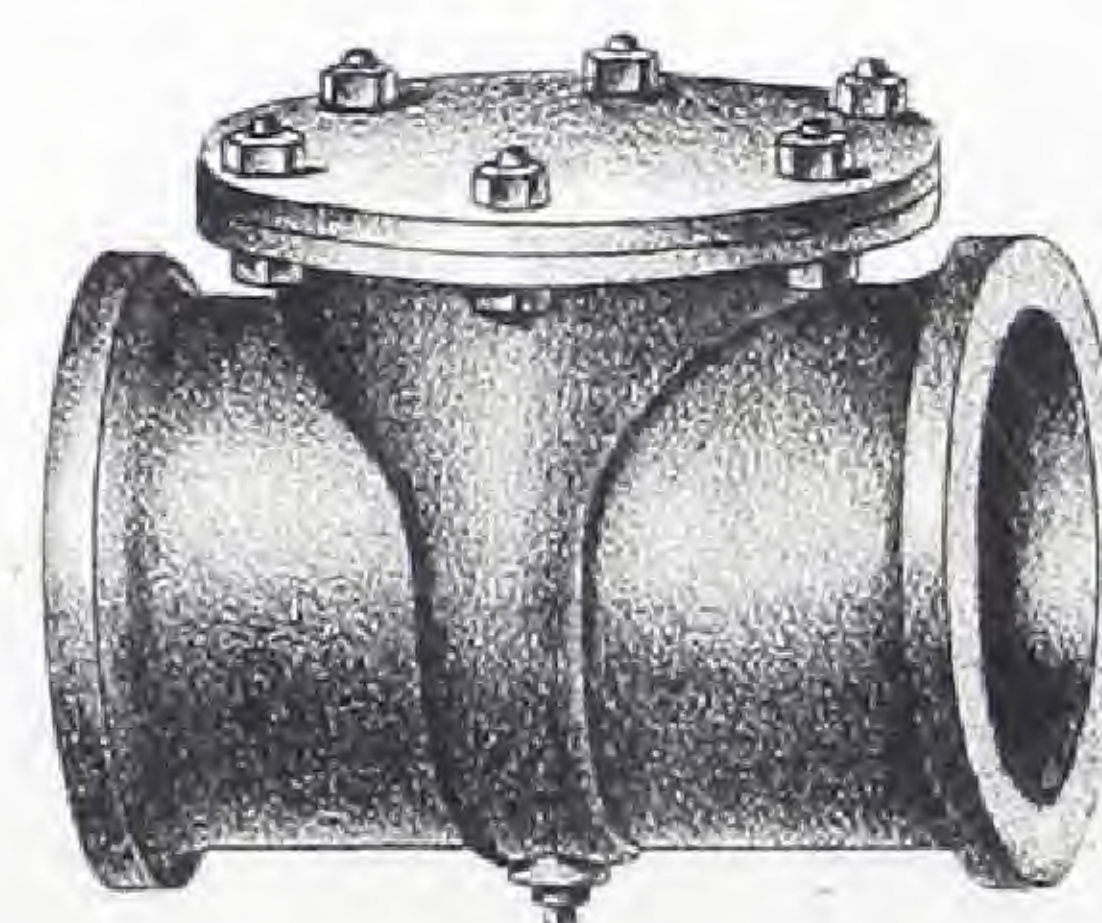
Double Face Valve,
(for Gas) flange ends.

No 39



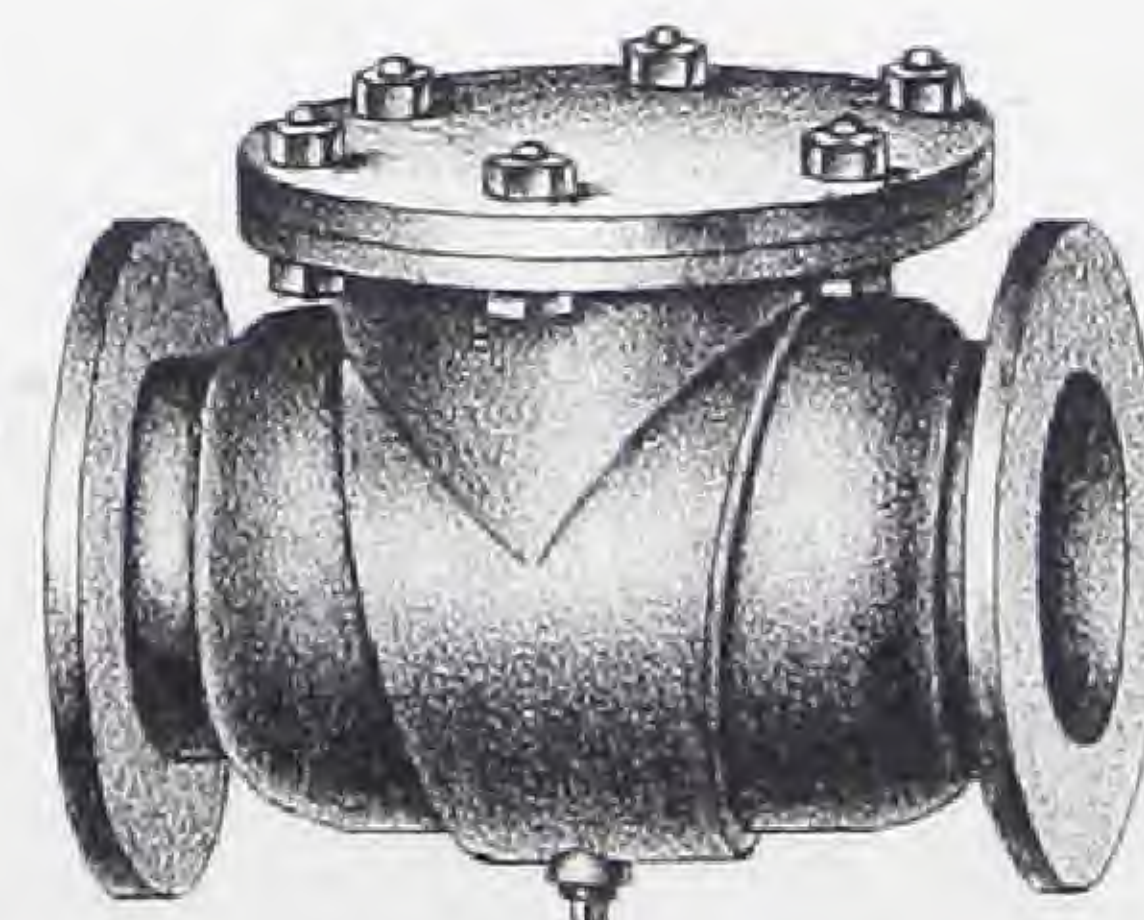
Double Face Valve
(for Gas) bell ends.

No 40.



Hinge Valve, bell ends,
leather faced Valve.

No 41.



Hinge Valve, flange ends,
leather faced Valve.

No 43

No 43 Station Plug, outside screw.

CLASS SIXTH.

Every order for special articles must have accurate plans and dimensions attached, and no order, "same as before," will be received.

Any article for which no price is quoted on the list will be made only to special order, although such article may be shown in the illustrations.

COOKING AND LAUNDRY APPARATUSES, PUMPS, BOILER FRONTS, FANS,
TUBULAR BOILERS, &c.

No.	PLATE.		
1	1	Mangle, Pulley 13×3½ inches; proper speed 60 to 75 revolutions per minute,	\$225 00
2	1	Steam Table, (made as ordered). The drawing shows two eight gallon enameled Kettles, (for soup); one eight gallon copper urn, stone lined, (for coffee); one seven gallon copper urn, stone lined; one four gallon copper urn, stone lined, and one three gallon copper urn, stone lined, (the last three for tea and milk),	500 00

STEAM CARVING TABLE, WITH DISHES, PLATTERS AND COVERS.

Any Size of Table and Stand Made to Order.

3 1 Steam Dishes, Platters and Covers, without Table or connections, of prices and sizes below :

	Size of Oblong Platter.	Price of Dish.	Price of Platter.	Price of Cover.	Total Price.
No. 1,	22½ × 15½ in.	\$16.00	\$6.00	\$7.00	\$29.00
" 2,	19¾ × 14½ "	13.00	5.00	6.50	24.50
" 3,	17½ × 12½ "	10.00	3.50	5.00	18.50
" 4,	15 × 9 "	6.50	3.00	4.00	13.50

For Table 17 feet 10 inches long there is used, No. 1, two; No. 2, four; No. 3, two; No. 4, eight.

"	"	12 feet 1 inch	"	"	"	No. 1, two; No. 2, three; No. 3, one; No. 4, four.
---	---	----------------	---	---	---	--

Price of 17 feet 10 inch Table, complete, with Slab and Frame,	\$420 00
--	----------

[illegible]

4	1	Drain Table or Drip Pan, with Grids and Back Plate, 2 feet wide, by 2½ inches deep; length,	4 feet.	5 feet.	6 feet.	7 feet.	8 feet.	9 feet.
		Price,	\$14.30	\$17.50	\$20.70	\$23.90	\$27.10	\$30.30

COOKING AND LAUNDRY APPARATUSES.

6	2	Cooking Ranges for Hotels, Hospitals, or Public Institutions, (to order).							
7	2	Broiling Oven " " " " "							
8	2	Kettle, 3 feet 10 inches diameter, over all, by 1 foot 7 $\frac{3}{4}$ inches deep,							\$21 00
9	2	Double Bottom, (or jacketed), Steam Kettles, (inside Kettle iron or copper, outside cast iron), made to order.							
10	2	Double (or jacketed) Steam Kettles, 47 gallons; 65 gallons; 80 gallons; 100 gallons.							
			\$80.00	\$95.00	\$110.00	\$125.00			
11	2	Kettles, inside dimensions,	3' 6'' \times 2' 2''	3' 1 $\frac{1}{4}$ '' \times 2' 1 $\frac{3}{4}$ ''	2' 10'' \times 2' 0 $\frac{1}{2}$ ''	2' 8 $\frac{1}{2}$ '' \times 1' 11 $\frac{1}{2}$ ''	2' 7 $\frac{1}{4}$ '' \times 1' 10 $\frac{1}{2}$ ''	2' 5'' \times 1' 10''	
		Capacity, (gallons), . . .	120	100	80	65	47	40	
		Price, not mounted, . . .	\$46.00	\$40.00	\$34.00	\$28.00	\$22.00	\$20.00	
		Price, mounted, . . .	48.50	42.50	36.50	30.25	24.25	22.25	
12	2	Hot Water Backs, 14 \times 8 \times 3 $\frac{1}{2}$ inches; 16 $\frac{1}{2}$ \times 11 \times 4 $\frac{1}{2}$ inches; 19 \times 11 \times 4 $\frac{1}{2}$ inches; 24 $\frac{1}{2}$ \times 13 \times 4 $\frac{1}{2}$ inches.							
			\$3.00	\$6.50	\$8.00	\$11.00			
14	2	Hot Water Box, 29 \times 20 inches outside, by 20 \times 10 $\frac{1}{2}$ inches inside, by 11 inches long,							25 00
45	5	Wringing Machines, (centrifugal), No. 2. Basket 29 inches diameter, by 12 inches deep, (900 to 1,000 revolutions per minute, for clothes, has 8 \times 4 inches pulley, which should run 480 to 500 revolutions per minute),							350 00
		Wringing Machines, (centrifugal), No. 3. Basket 42 inches diameter, by 19 inches deep, (750 revolutions per minute, for clothes, pulley same speed, 10 \times 6 inches),							550 00
46	5	Hospital Railway Food Carriage,							150 00
44	5	Coil Heater.							
		Inside dimensions of Shell,	1' 0 $\frac{1}{4}$ '' \times 9 $\frac{1}{8}$ ''	1' 3 $\frac{1}{2}$ '' \times 1' 0 $\frac{1}{2}$ ''	1' 6'' \times 1' 6 $\frac{1}{4}$ ''				
		Length of Tube in Coil,	10' 6''	14' 6''	18'				
		Size of Tube in Coil,	$\frac{3}{4}$ ''	1''	1 $\frac{1}{4}$ ''				
		Price,	\$16.00	\$23.00	\$34 00				

CLASS SIXTH.—*Continued.*

No. PLATE.

20 3

WOODWARD'S STEAM PUMP.

No.	Diameter of steam Cylinder in inches.	Diameter of water Cylinder in inches.	Suction. in.	Steam. in.	Discharge. in.	Exhaust. in.	Gallons discharged per minute.	PRICE.
0	2½	1¾	¾	¾	¾	¾	3 to 5	\$125.00
1	4	2	1	¾	½	1	8 to 12	200.00
2	5	2½	1½	¾	1	1	26 to 39	275.00
3	7	3½	2	1	1½	2	52 to 78	375.00
4	9	5	2½	1½	2	2	85 to 120	550.00
5	12	7	3	1½	2½	2½	167 to 240	650.00
6	14	8	4	2	3½	3	225 to 300	850.00
7	16	9	5	2	4	3	414 to 518	1200.00
8	18	12	6	2	5	3	726 to 900	1400.00
9	20	14	7	3	5	5	900 to 1200	2000.00
10	22	16	. .	. .	. .	. .	1500 to 1800	. . . .
11	24	18	. .	. .	. .	. .	1700 to 2000	. . . .
12	26	20	. .	. .	. .	. .	2000 to 2500	. . . .
13	30	20	8	4	8	5	2500 to 2800	4000.00

N. B.—The pulley fly-wheel on this Engine can be used for driving other machinery.

21 }
22 } 3

WORTHINGTON STEAM PUMPS.

Numbers Designating Sizes.		Diameter of Steam Cylinder in inches.	Diameter of Water Plunger in inches.	Length of Stroke in inches.	No. of Strokes per minute varying with kind of work and pressure.	Displacement in gallons per single stroke.	PRICE.
No. 1,	. . . .	3¾	2¼	3	80 to 175	154 1000	\$ 80.00
" 2,	. . . .	5	3	6	80 to 150	19 100	150.00
" 3,	. . . .	6½	4½	9	80 to 150	64 100	250.00
" 4,	. . . .	9	6	9	80 to 150	11 10	400.00
1st pattern " 5,	. . . .	12	7	9	80 to 150	158 100	500.00
2d " " 5,	. . . .	16	7	9	80 to 150	156 100	550.00
1st " " 6,	. . . .	12	10¼	9	75 to 125	336 100	625.00
2d " " 6,	. . . .	16	10¼	9	75 to 125	336 100	700.00
3d " " 6,	. . . .	18½	10¼	9	75 to 125	336 100	775.00
1st " " 7,	. . . .	12	14	9	70 to 120	627 100	750.00
2d " " 7,	. . . .	16	14	9	70 to 120	627 100	825.00
3d " " 7,	. . . .	18½	14	9	70 to 120	627 100	900.00

N. B.—In case of fire or other emergency, the speed of the pump may be considerably increased beyond the figures stated above.

23 3

WORTHINGTON'S DUPLEX STEAM PUMPS.

		Diameter of Steam Cylinder in inches.	Diameter of Water Plungers in inches.	Length of Stroke in inches.	No. of Strokes per minute varying with kind of work and pressure.	Displacement in gallons per stroke.	PRICE.
		4½	2¾	4	100 to 150	22 100	\$225.00
		6	4	6	80 to 125	68 100	400.00
		7½	4½	10	80 to 125	144 100	700.00
		10	6	10	75 to 125	255 100	800.00
		12	7	10	75 to 125	348 100	900.00
		14	7	10	75 to 125	348 100	1000.00
		14	10¼	10	75 to 125	746 100	1300.00
		16	10¼	10	75 to 125	746 100	1400.00
		18½	10¼	10	75 to 125	746 100	1500.00
		14	14	10	75 to 125	14	1600.00
		18½	14	10	75 to 125	14	1750.00
		14	15	15	75 to 125	2224 100	2250.00

N. B.—In case of fire or other emergency, the speed of the pump may be considerably increased beyond the figures stated above.

CLASS SIXTH—Continued.

No. PLATE.

24 3

CLARK'S PATENT STEAM AND FIRE REGULATOR.

Size.		High Pressure.	Low Pressure.	Size.		High Pressure.	Low Pressure.
No. 1. Under 5 horse power,		\$25.00		No. 3. For 120 horse power,		\$100.00	\$115.00
No. 2. For 10 horse power,		40.00		" " 140 " "		105.00	120.00
" " 15 " "		45.00		" " 160 " "		110.00	125.00
" " 20 " "		50.00		" " 180 " "		115.00	130.00
No. 3. " 30 " "		60.00	\$75.00	" " 200 " "		120.00	135.00
" " 40 " "		65.00	80.00	" " 250 " "		125.00	140.00
" " 50 " "		70.00	85.00	" " 300 " "		130.00	145.00
" " 60 " "		75.00	90.00	" " 350 " "		135.00	150.00
" " 70 " "		80.00	95.00	" " 400 " "		140.00	155.00
" " 80 " "		85.00	100.00	" " 450 " "		145.00	160.00
" " 90 " "		90.00	105.00	" " 500 " "		150.00	165.00
" " 100 " "		95.00	110.00				

In estimating the Horse Power of Boilers,

10 square feet of heating surface for plain Cylinder Boilers,

12 " " " " (fire and flue) " " " "

16 " " " " (fire and tubes) Tubular Boilers,

As considered equal
to one horse power.

25 3

VENTILATING FANS FOR HOSPITALS AND PUBLIC BUILDINGS.

Diameter.	Usual number of revolutions per minute.	Unresisted discharge, cubic feet of air per minute.	Discharge with proper Ducts (approximate) cubic feet of air per minute.	Area of Air Duct,* square feet.	Price, Boxed, ready for shipment, at Philadelphia, including pair of Pedestals, Pulley, and usual length of Shaft. Disc and Rim not turned or painted.
14 feet Single, . .	70@125	110,000@200,000	55,000@100,000	62	\$750.00
12 " " . .	80@150	77,000@145,000	39,000@ 72,000	46	550.00
10 " " . .	100@175	56,000@ 98,000	28,000@ 49,000	32	425.00
8 " " . .	125@220	35,000@ 58,000	17,000@ 29,000	20½	300.00
6 " " . .	160@300	19,500@ 36,000	10,000@ 18,000	11½	250.00
5 " " . .	200@350	14,000@ 24,000	7,000@ 12,000	8	200.00
6 " Double, . .	160@300	39,000@ 72,000	20,000@ 36,000	23	500.00

* The area of Air Duct given is the least suitable dimension near the Fan, or two-thirds that of distributing Flues or outlets. Ducts of considerable length, or outlets at a distance from the Fan, should have greater area.

26 3

BLOWING FAN FOR BOILERS, MILL FURNACES, &c.

Diameter of Blades.	Revolutions per Minute, (usual number.)	Quantity of Coal per 24 hours for which they will supply air, (approximate,) resistance of Ducts being taken at 2 inches water pressure.	Price.
6 feet.	500 to 800	70 to 120 gross tons.	\$900.00

42 5

UPRIGHT TUBULAR BOILERS.

Size.		PROPORTIONS OF BOILERS.							Price.
Diameter of Shell.	Length of Shell.	Area of Grate.	Total Heating Surface.	Ratio of Grate to Heating Surface.	Number of Flues.	Diameter of Flues.	Length of Flues.	Horse Power.	
Inches.	Feet. Inches.	Decimal Sq. Ft.	Decimal Sq. Ft.	Number.	Number.	Inches.	Feet. Inches.	Decimals.	
20	4 1½	1.07	20.7	$\frac{1}{20}$	19	1½	2 3	1.5	
20	4 10½	1.07	25.6	$\frac{1}{24}$	19	1½	3 0	1.65	
24	5 0	1.75	35.7	$\frac{1}{20}$	19	2	3 0	2.6	
24	5 9	1.75	42.5	$\frac{1}{24}$	19	2	3 9	2.85	
28	5 1½	2.64	55.9	$\frac{1}{20}$	31	2	3 0	3.95	
28	5 10½	2.64	66.9	$\frac{1}{24}$	31	2	3 9	4.3	
28	6 7½	2.64	77.9	$\frac{1}{28}$	31	2	4 6	4.6	
32	5 3	3.70	76.9	$\frac{1}{20}$	43	2	3 0	5.58	
32	6 0	3.70	91.9	$\frac{1}{24}$	43	2	3 9	6.	
32	6 9	3.70	107.2	$\frac{1}{28}$	43	2	4 6	6.47	
36	5 6	4.91	100.	$\frac{1}{20}$	43	2½	3 1½	7.35	
36	6 3	4.91	118.9	$\frac{1}{24}$	43	2½	3 10½	8.	
36	7 0	4.91	137.8	$\frac{1}{28}$	43	2½	4 7½	8.6	

CLASS SIXTH.—Continued.

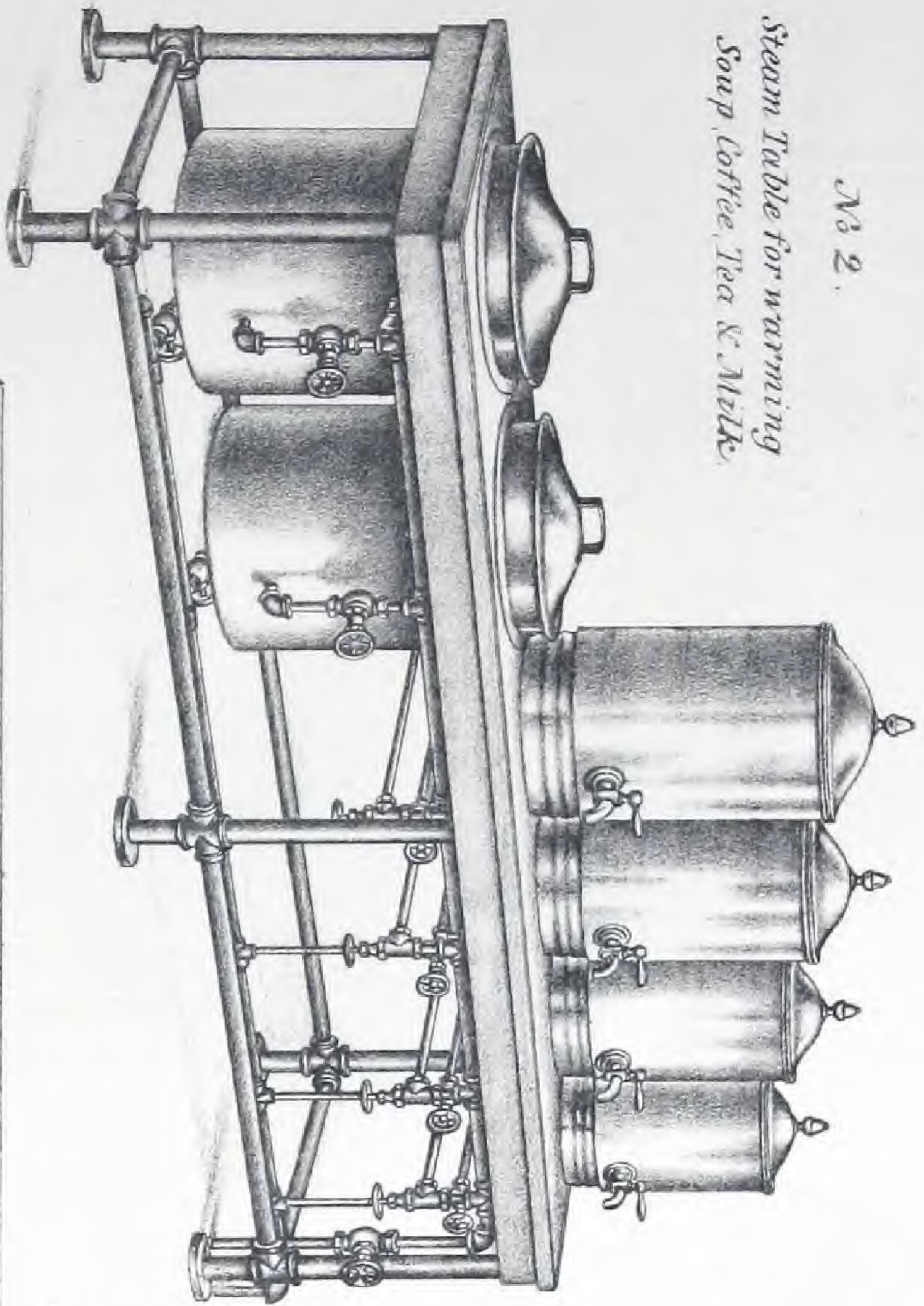
No.	Description	Price				
		Single	Double	Triple	Quadruple	Fivefold
100	1. Baller Point for Cylindrical Bolts, hexagonal columns. For 2" to 4" Bolts.	\$1.00	\$2.00	\$3.00	\$4.00	\$5.00
101	2. Baller Point for Cylindrical Bolts, hexagonal columns. For 2" to 4" Bolts.	1.00	2.00	3.00	4.00	5.00
102	3. Baller Point for Cylindrical Bolts, plate. For 2" to 4" Bolts.	1.00	2.00	3.00	4.00	5.00
103	4. Standard Baller Point, for bolting work. (See table.)					
		Single	Double	Triple	Quadruple	Fivefold
	Standard	1.00	2.00	3.00	4.00	5.00
	Double of Standard	2.00	4.00	6.00	8.00	10.00
	Triple of Standard	3.00	6.00	9.00	12.00	15.00
	Quadruple	4.00	8.00	12.00	16.00	20.00
	Fivefold	5.00	10.00	15.00	20.00	25.00

MORRIS, TASKER & CO'S ILLUSTRATED CATALOGUE.

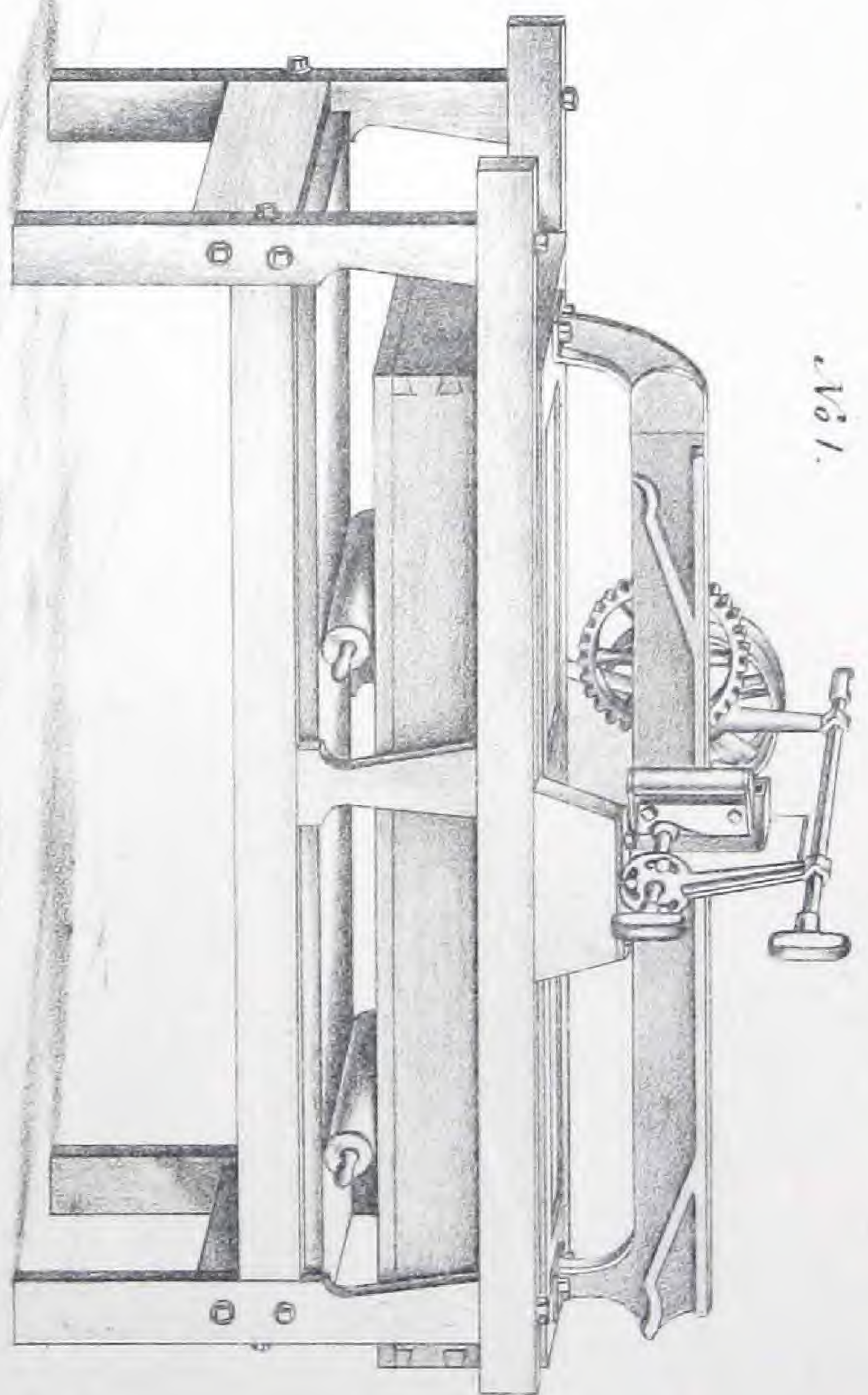
10th EDITION.

CLASS SIXTH.

Plate 1.



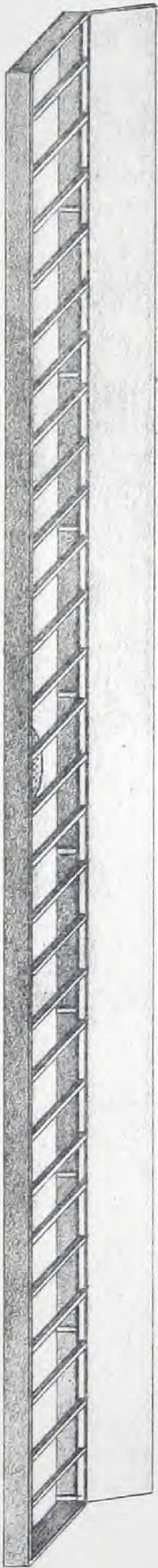
No. 2.
Steam Table for warming
Soup, Coffee, Tea & Milk.



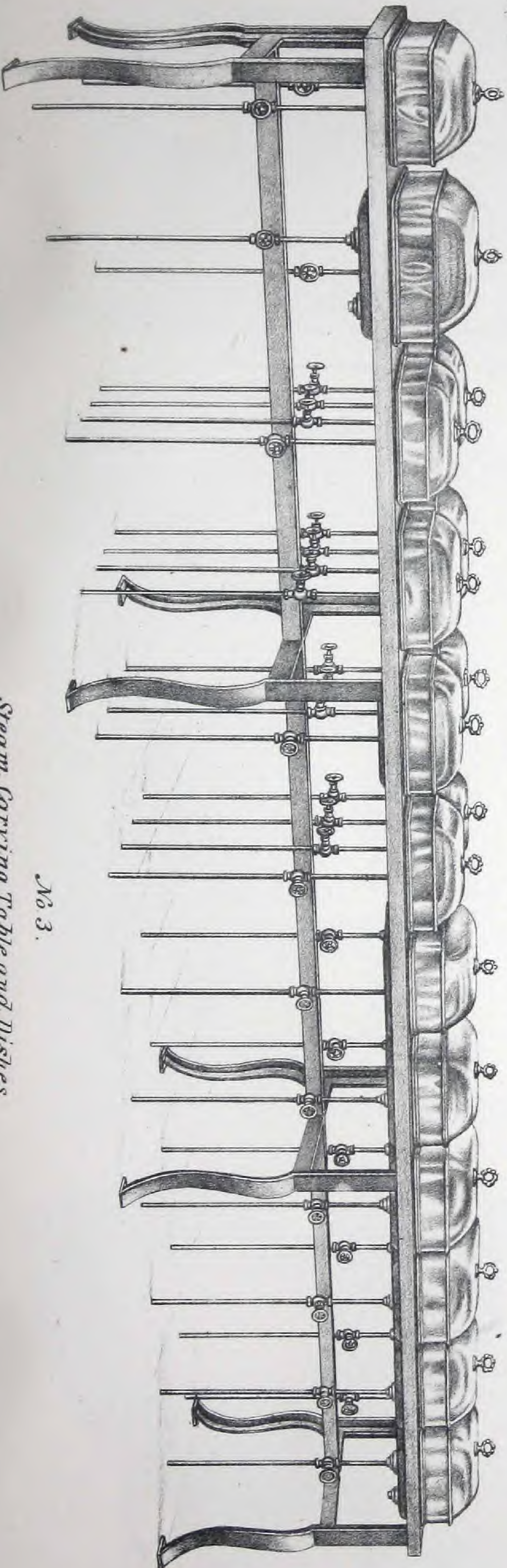
No. 1.

No. 4.

Mangle for Laundries.



Hotel Drain Table for Dishes.



No. 3.

Steam Carving Table and Dishes
with Platters & Covers.

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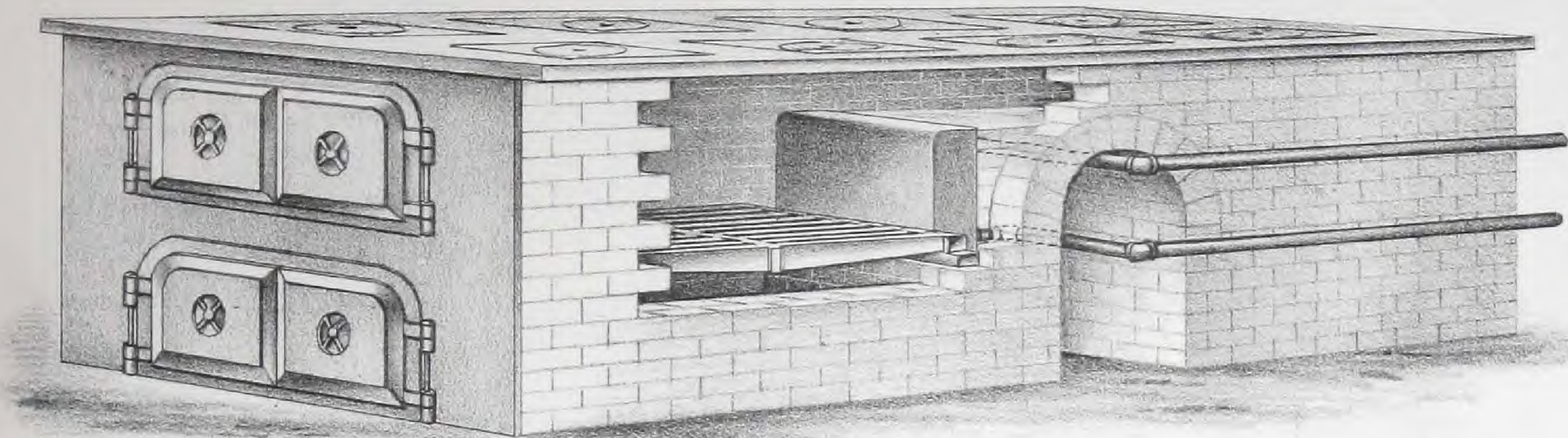
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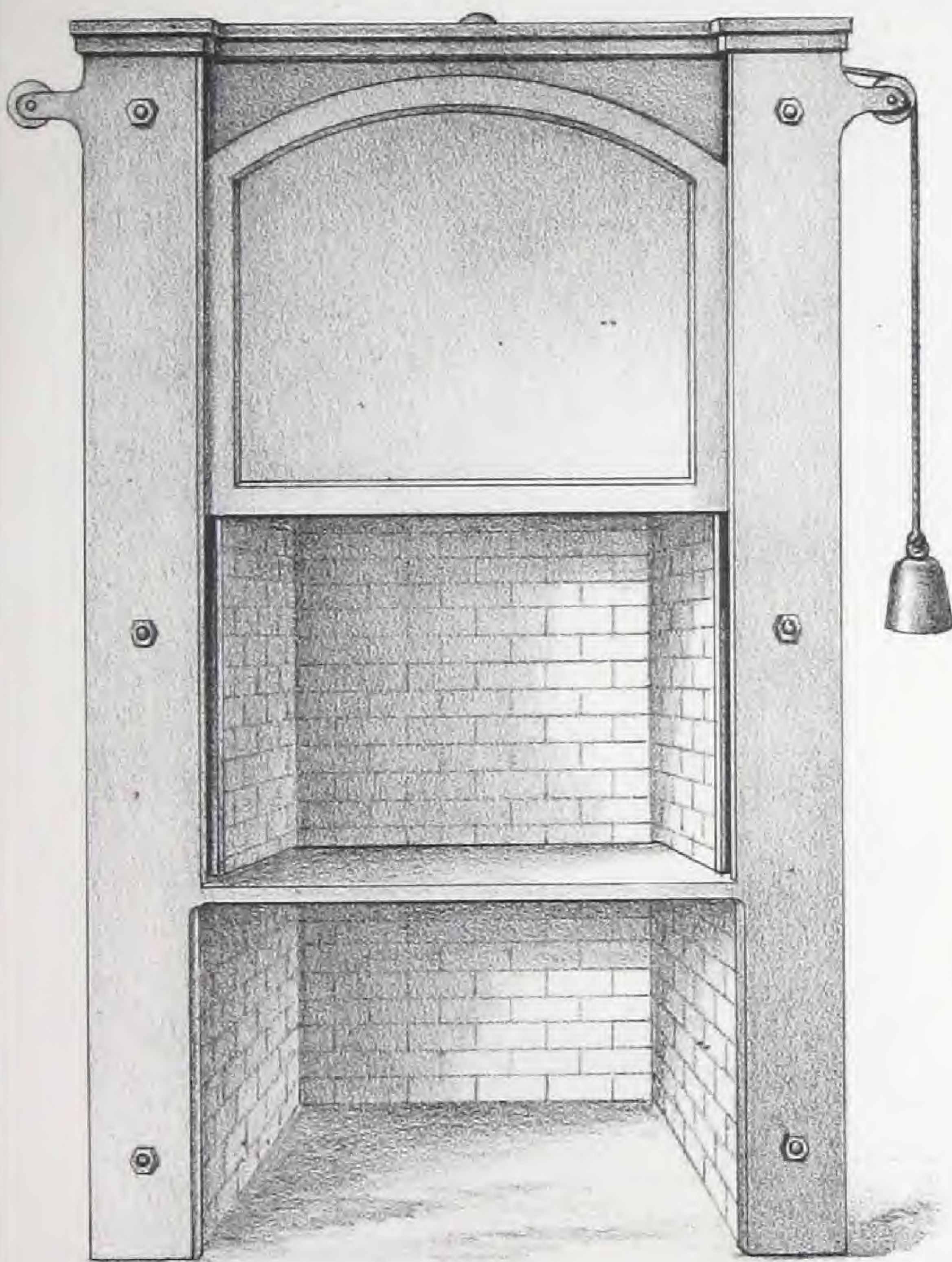
Plate 2.

No 6.



Cooking Range for Hotels &c.

No 7.



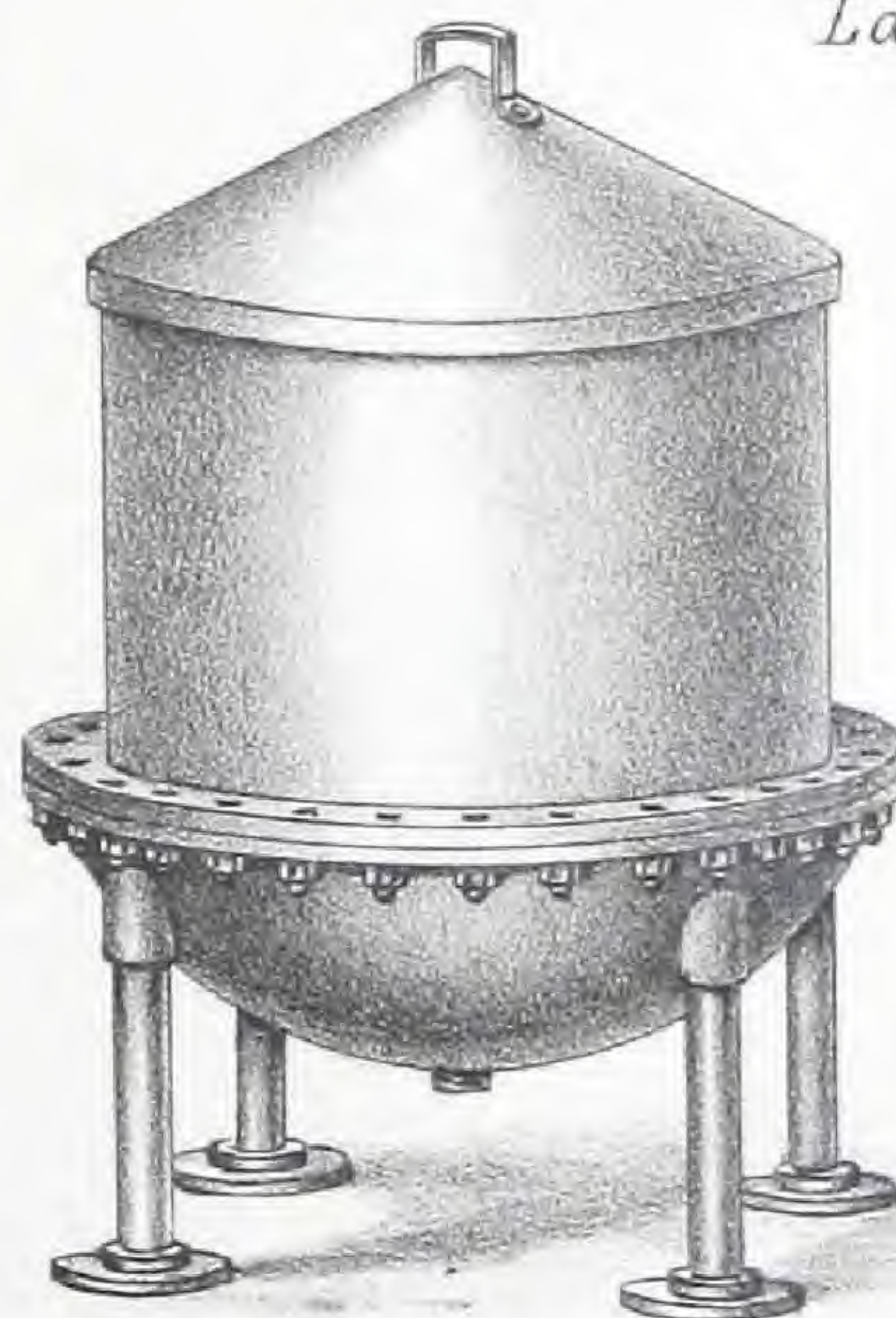
Broiling Oven.

No 8.



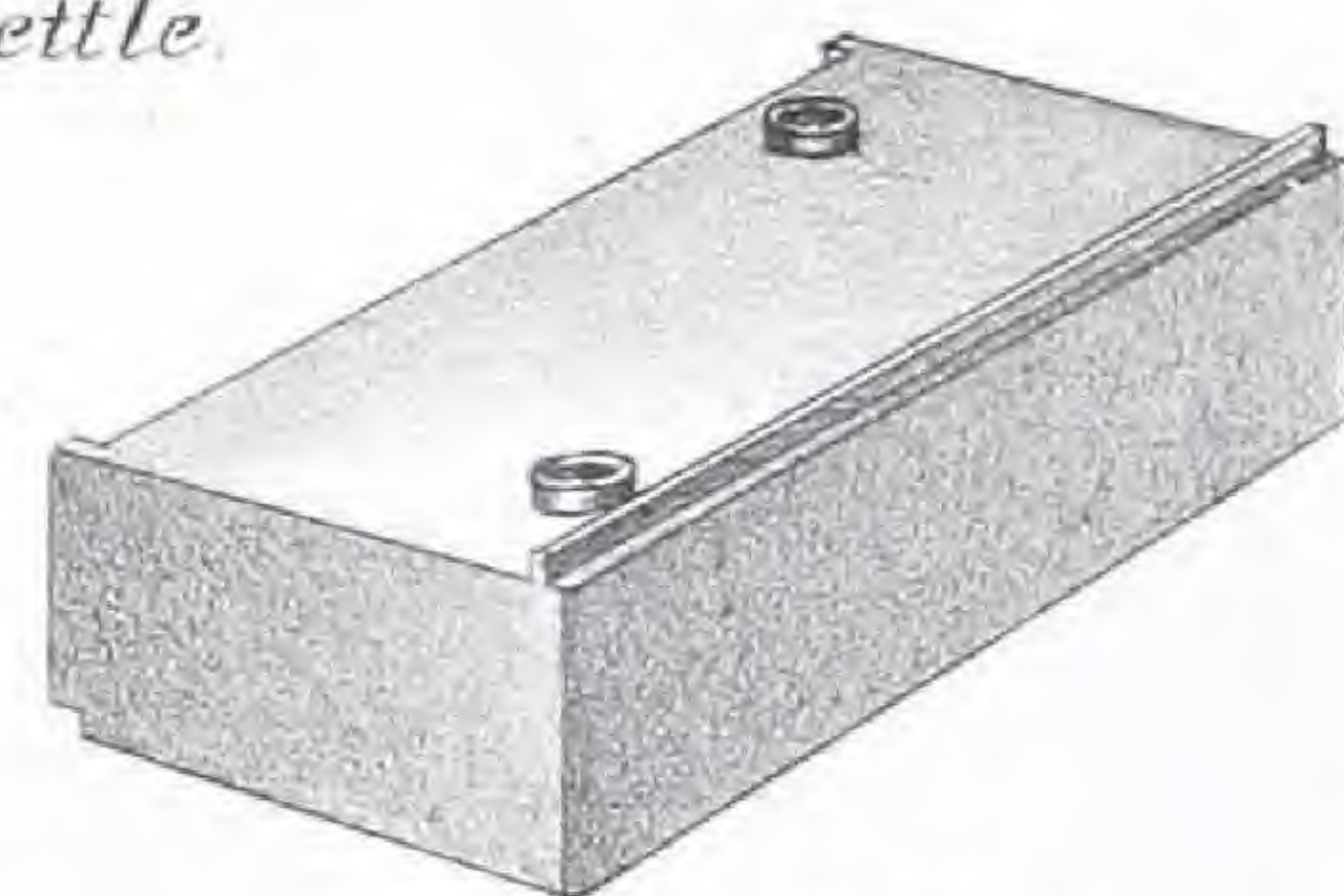
Lard Kettle.

No 9.



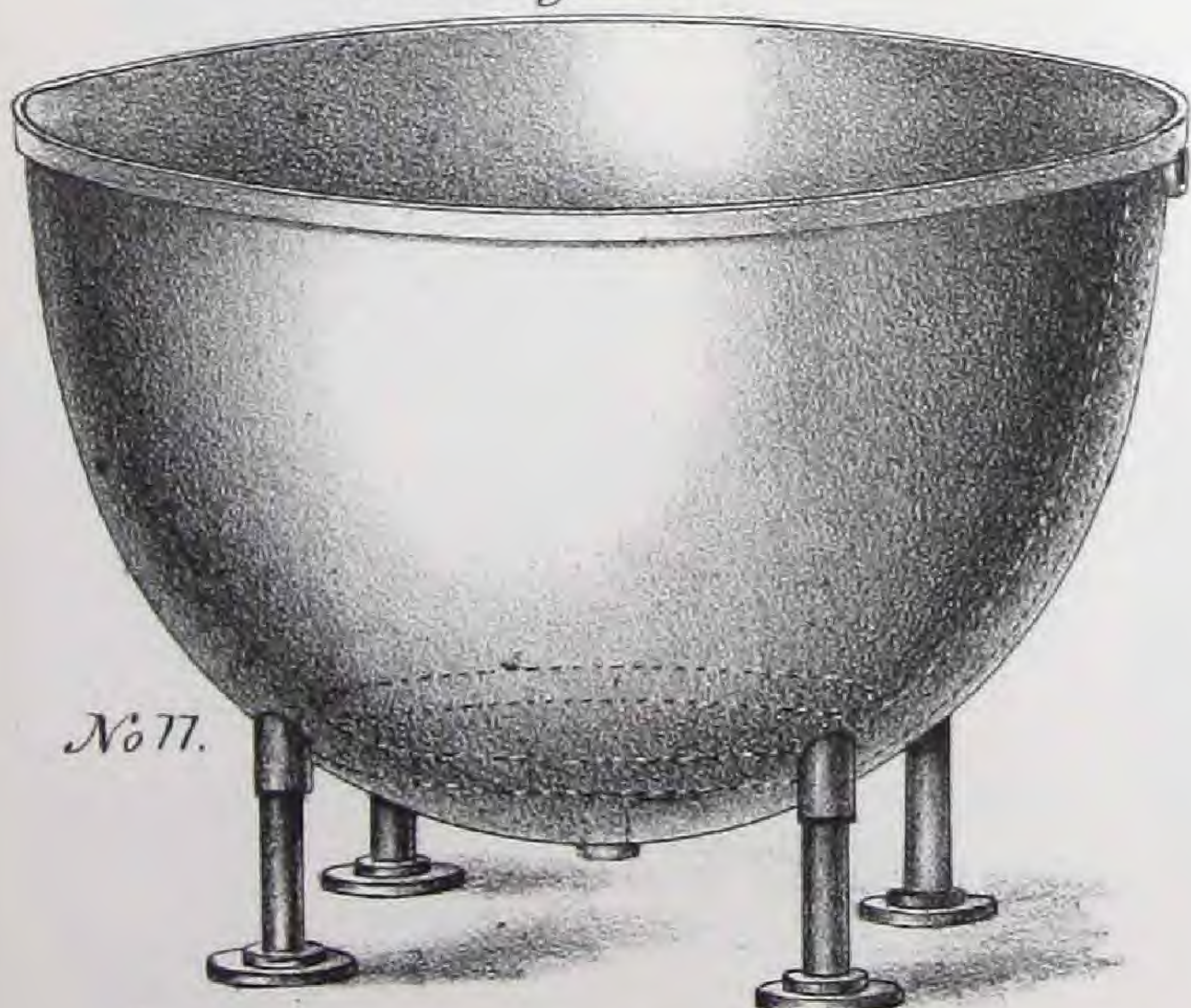
Double Bottom Copper Kettles.

No 12.



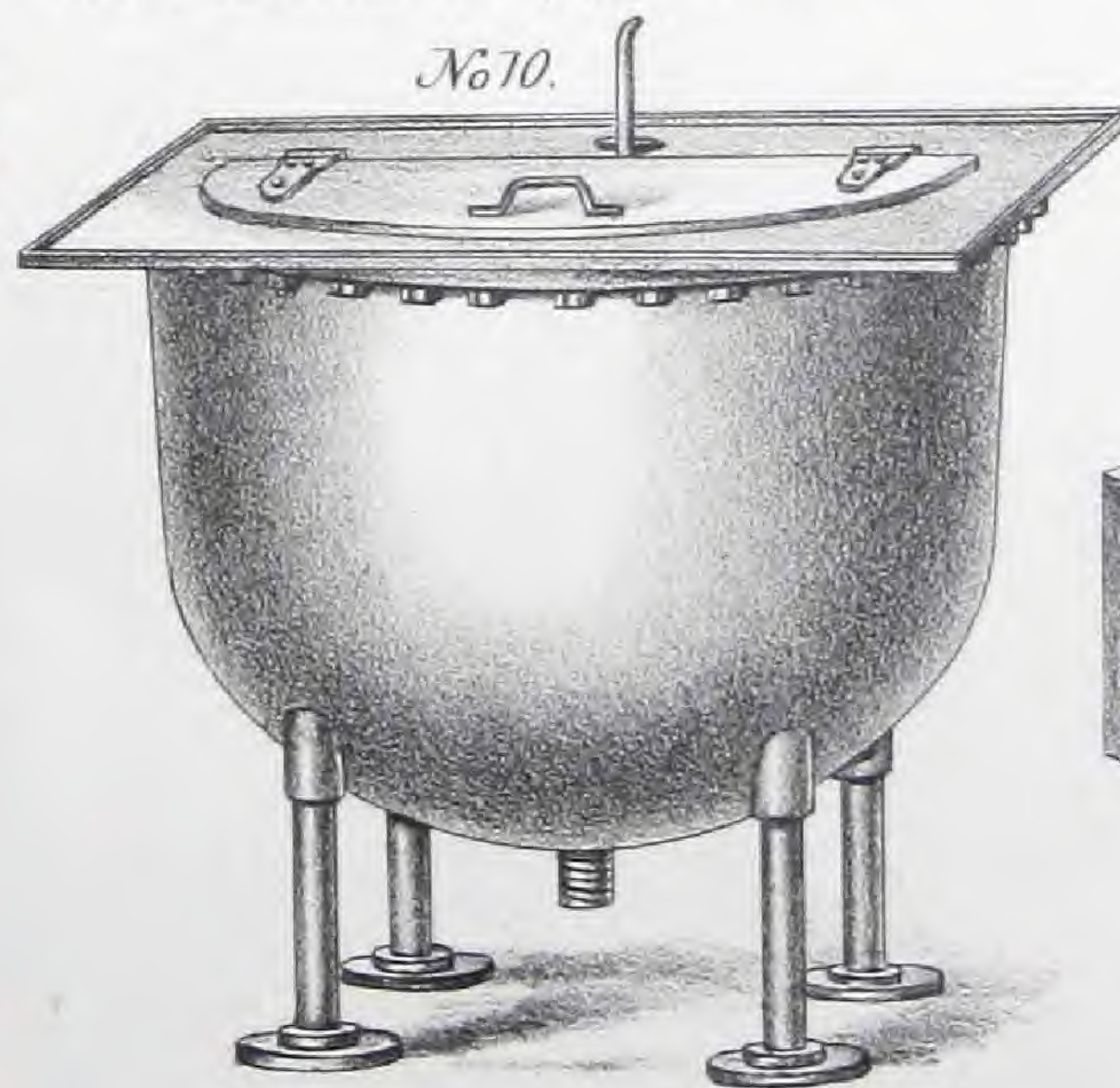
Hot Water Back.

No 11.



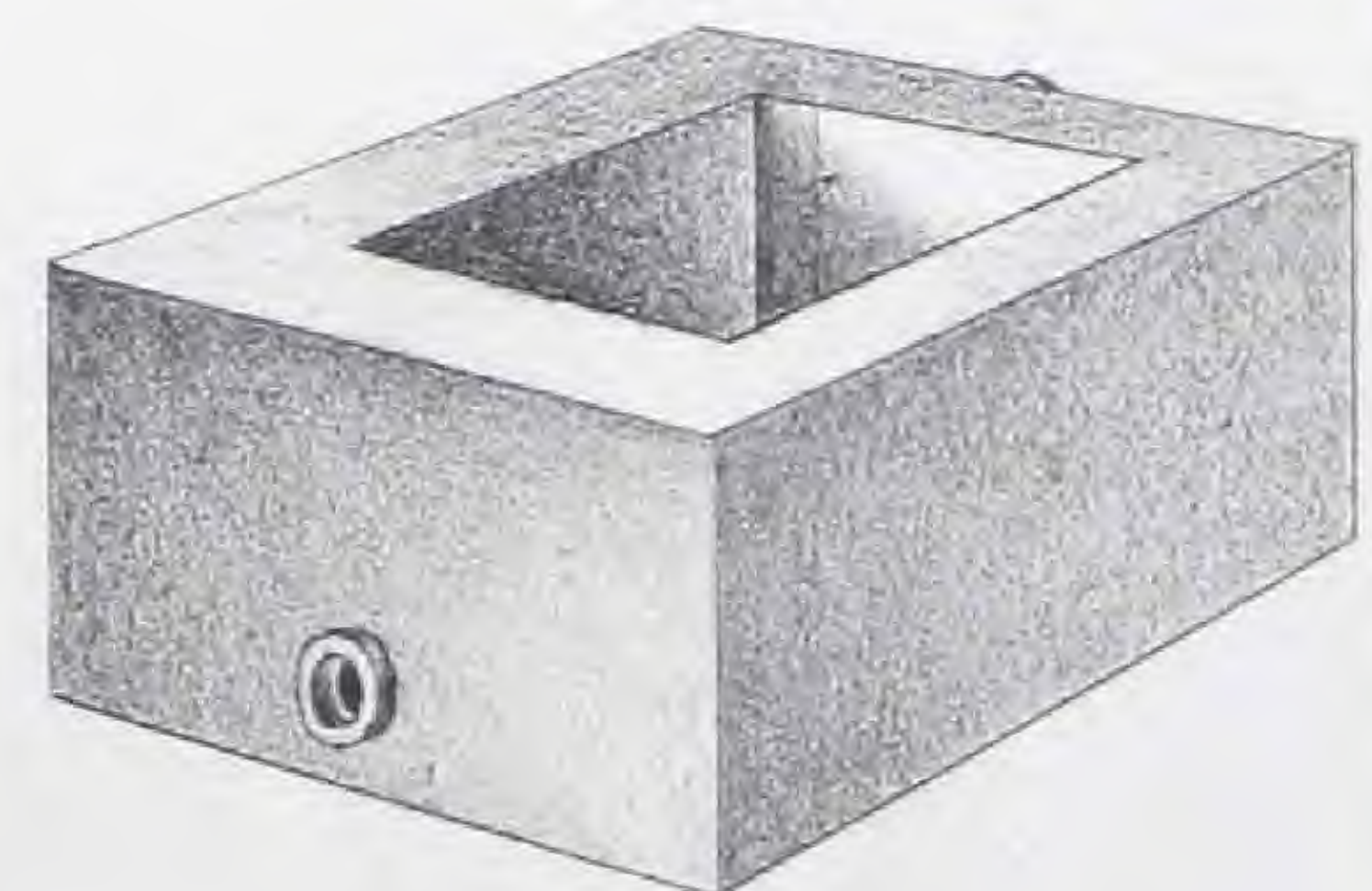
Kettle with Steam Coil.

No 10.



Double Steam Kettle.

No 14.



Hot Water Box.

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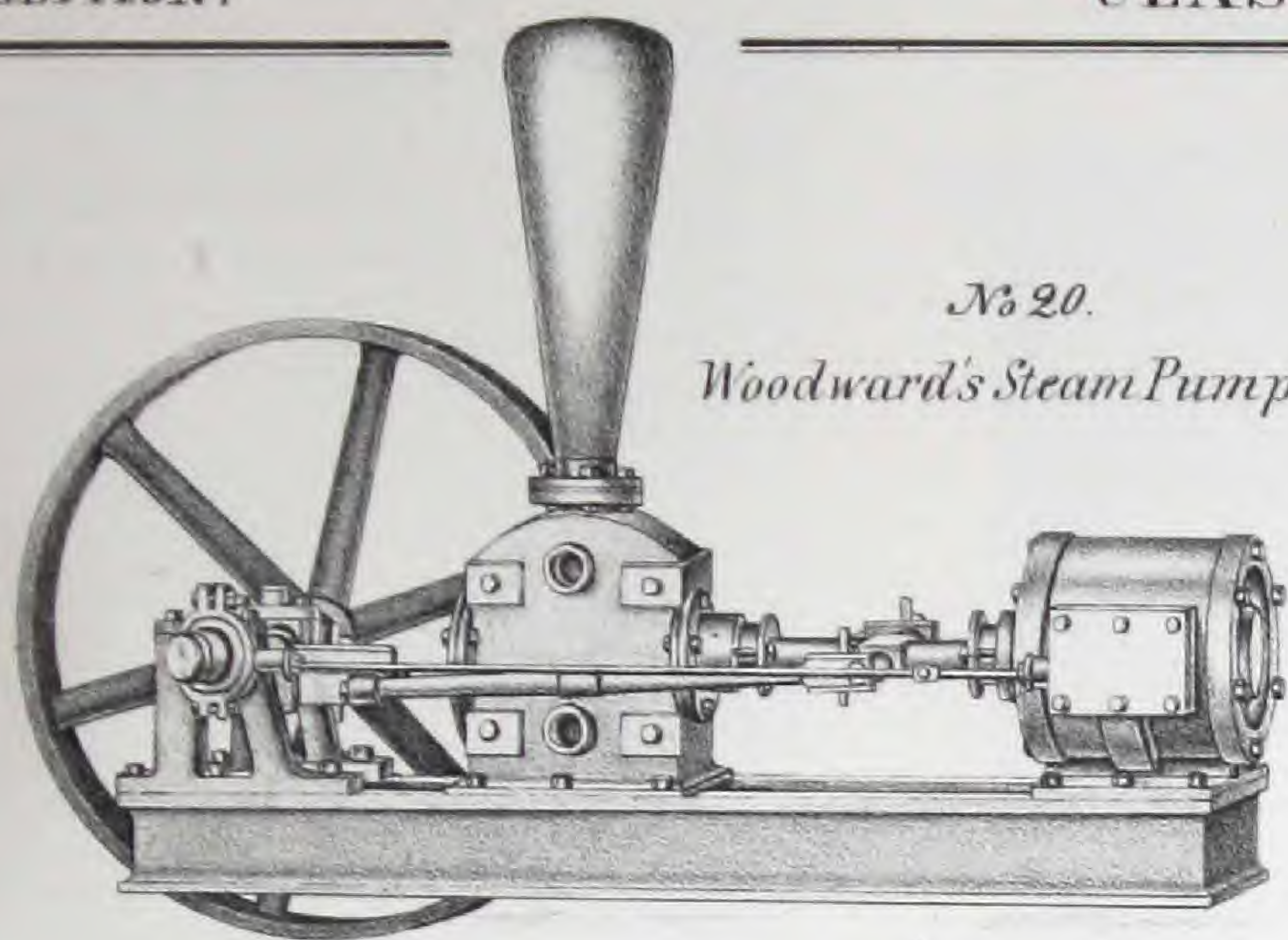
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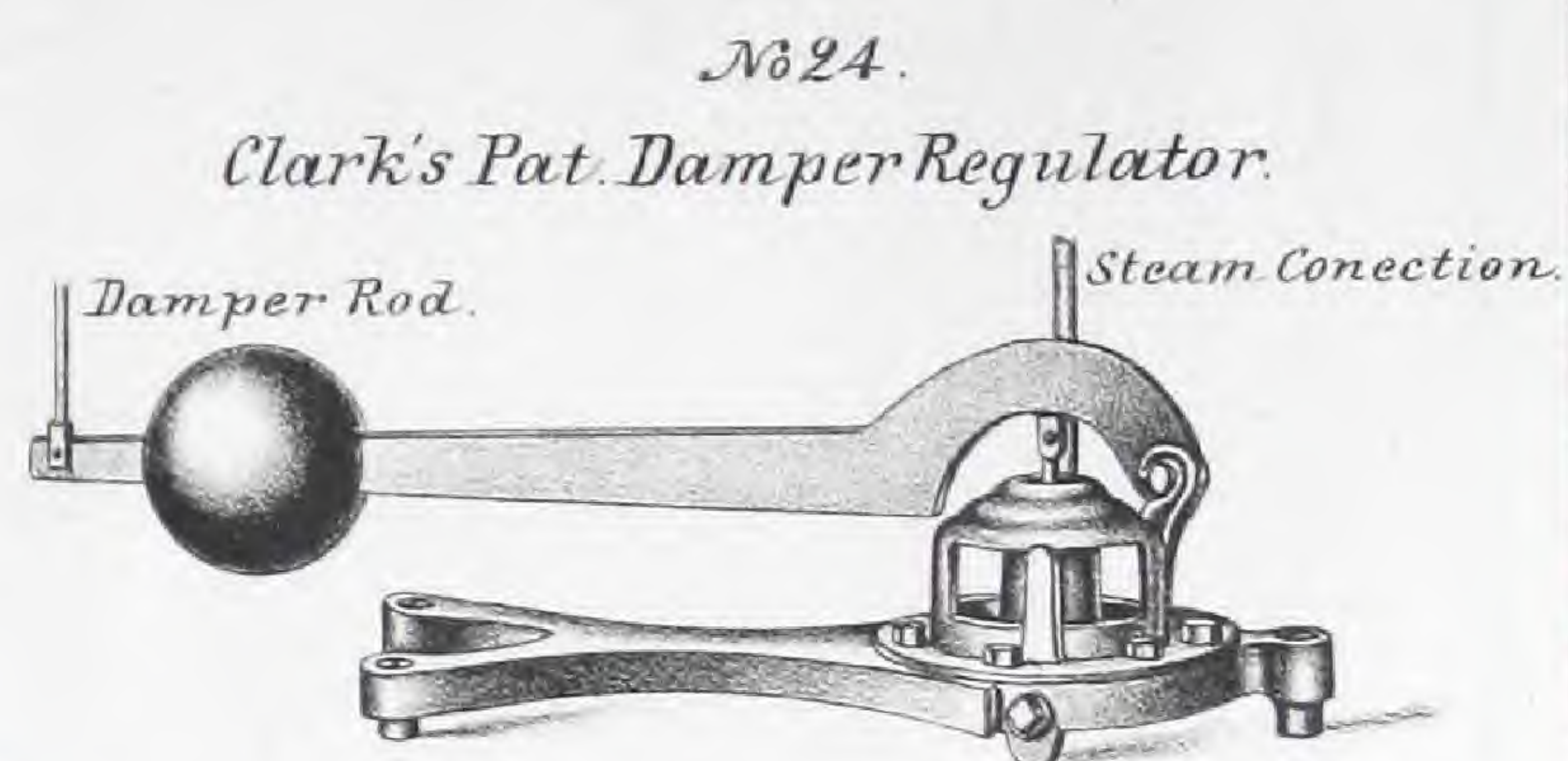
CLASS SIXTH.

Plate 3.



No 20.

Woodward's Steam Pump.

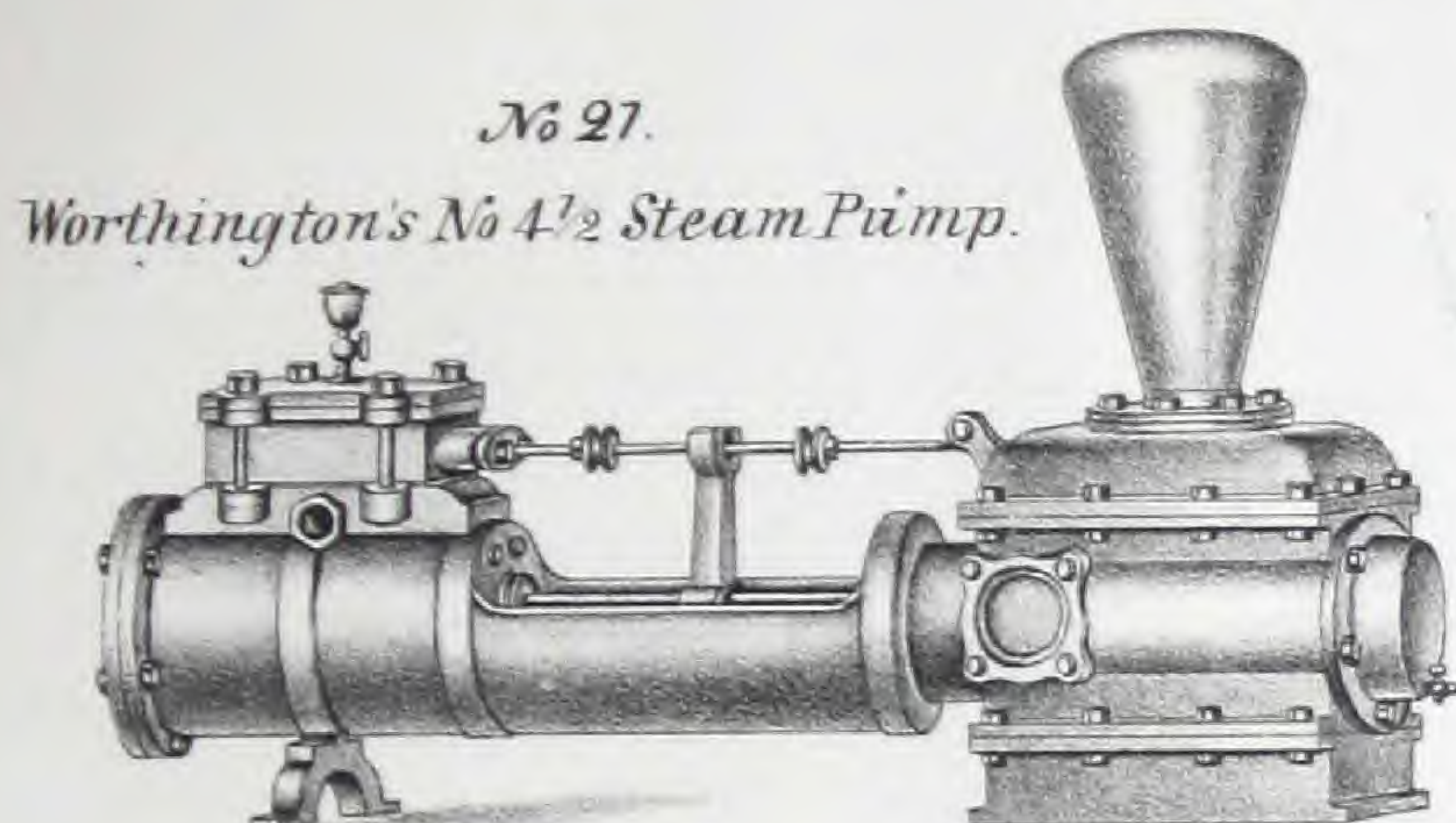


No 24.

Clark's Pat. Damper Regulator.

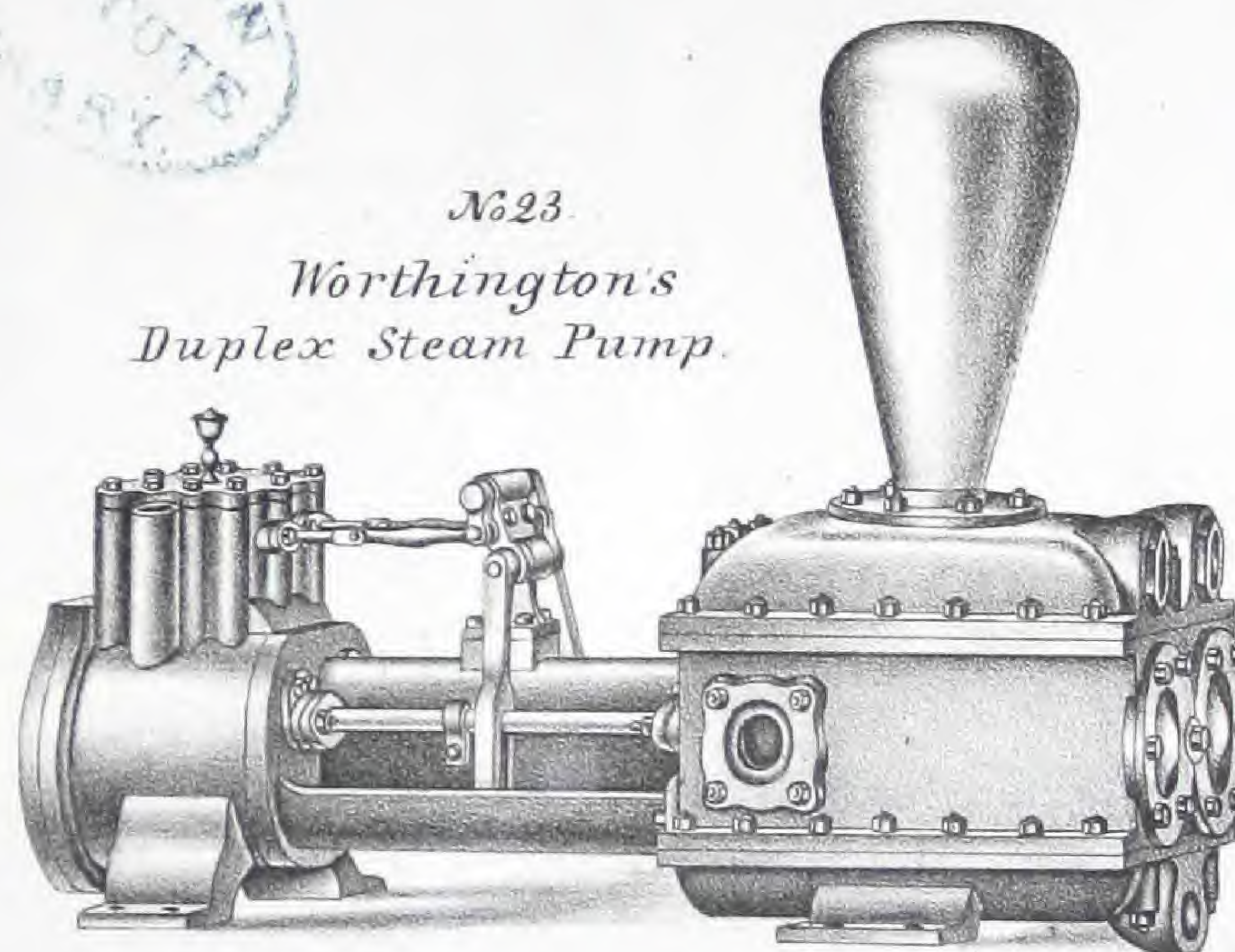
Damper Rod.

Steam Connection.



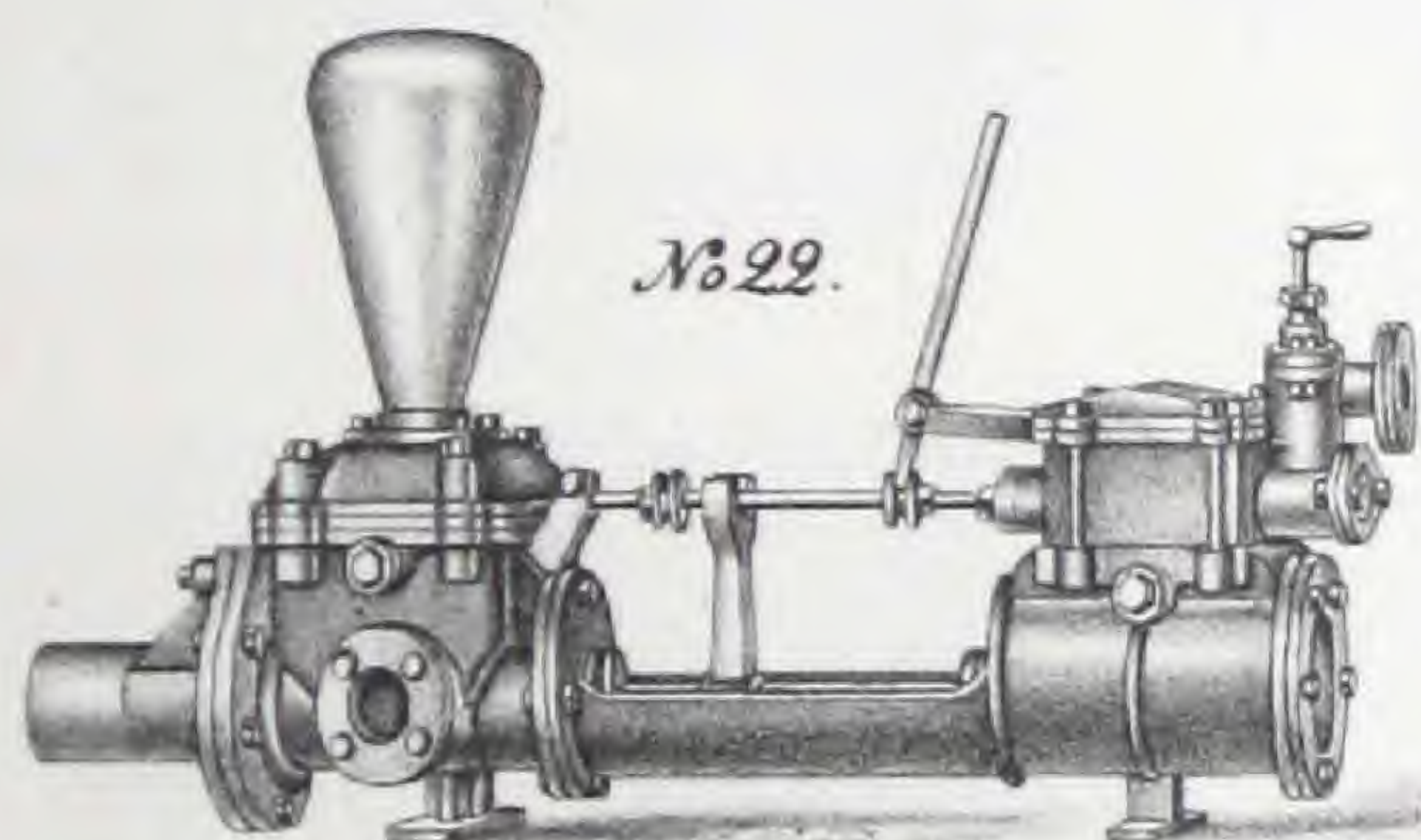
No 27.

Worthington's No 4 1/2 Steam Pump.



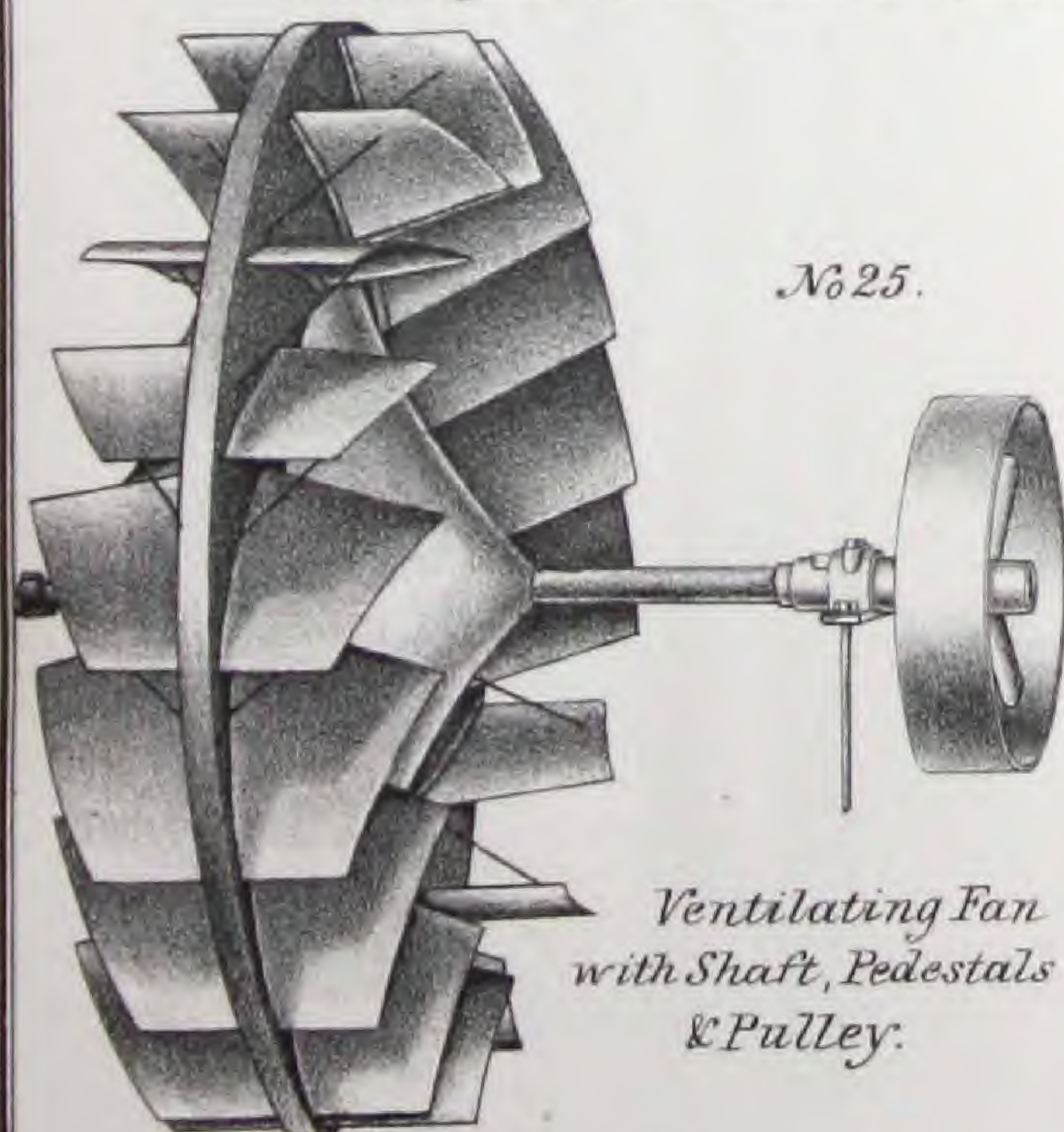
No 23.

Worthington's Duplex Steam Pump.



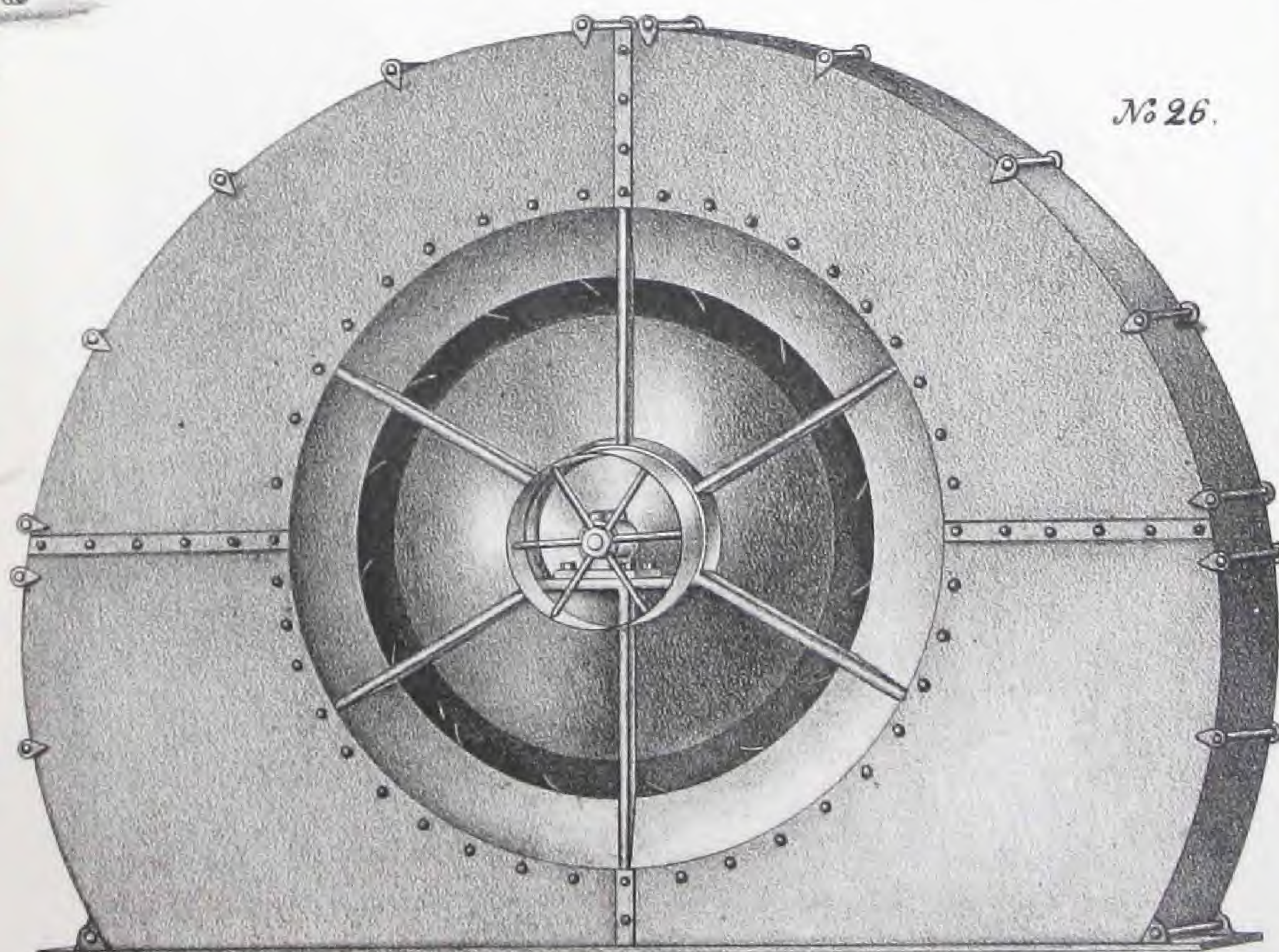
No 22.

Worthington's No 3 Steam Pump.



No 25.

Ventilating Fan
with Shaft, Pedestals
& Pulley.



No 26.

Blowing Fans.

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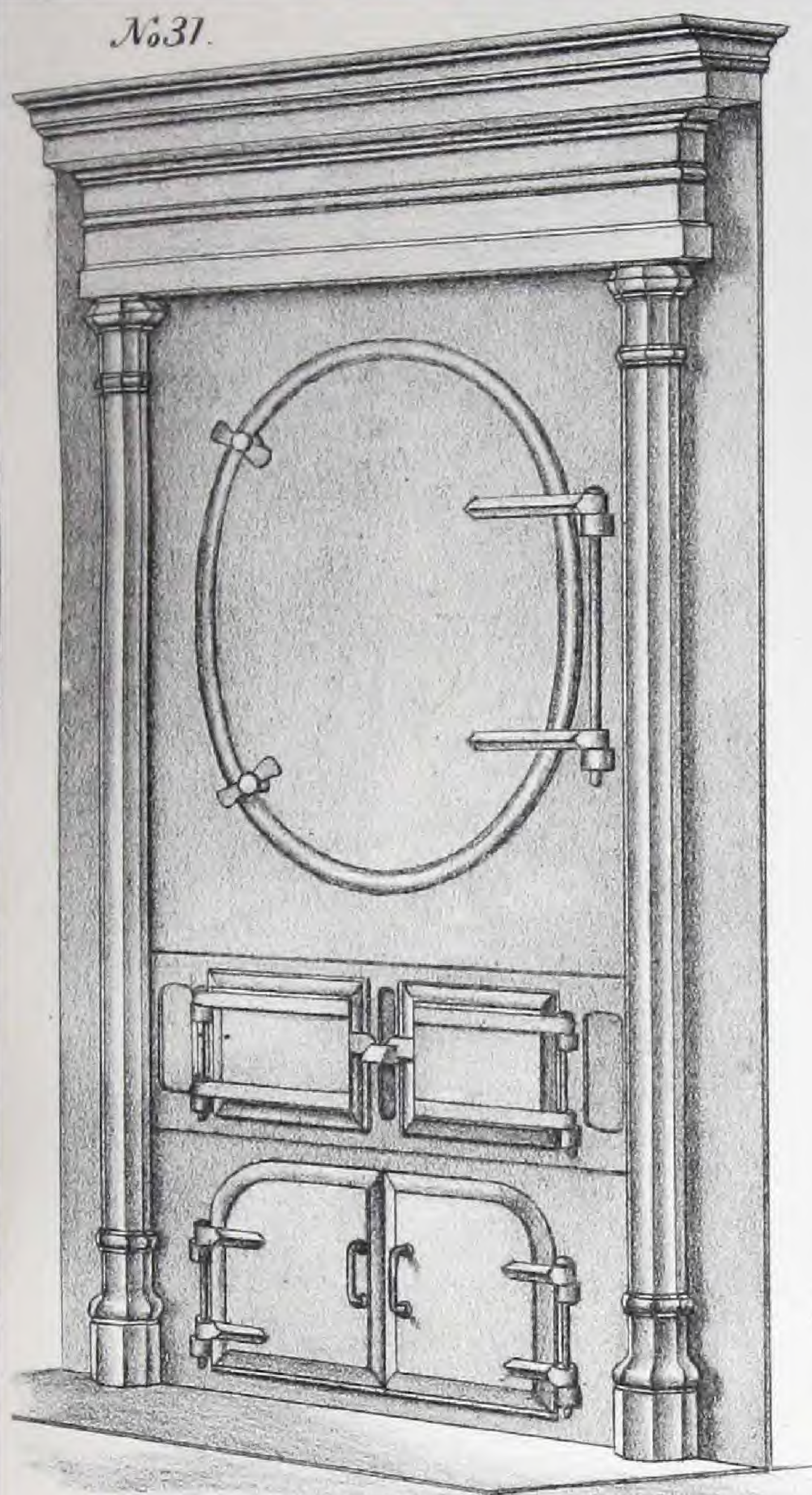
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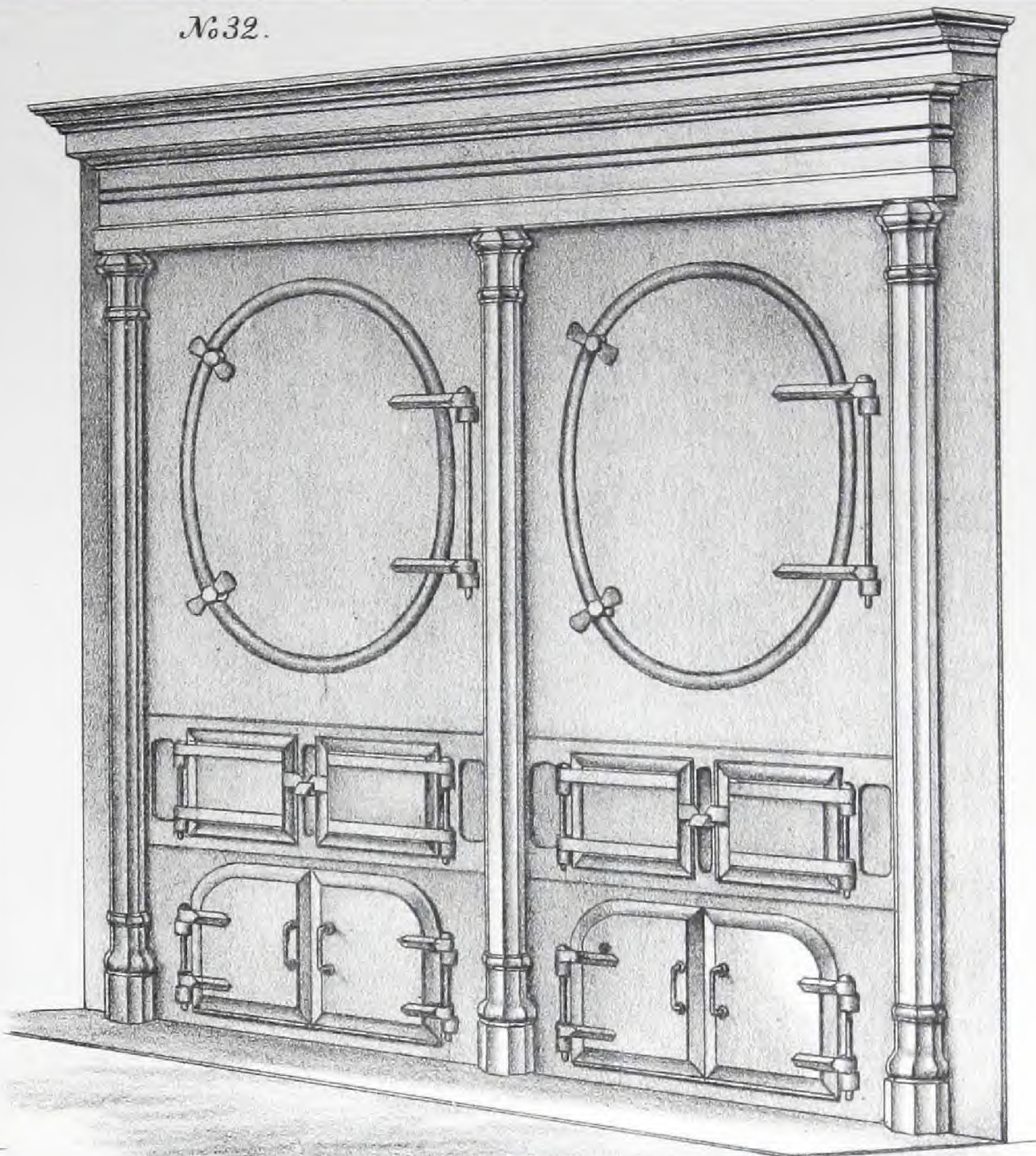
Plate 4.

N^o31.



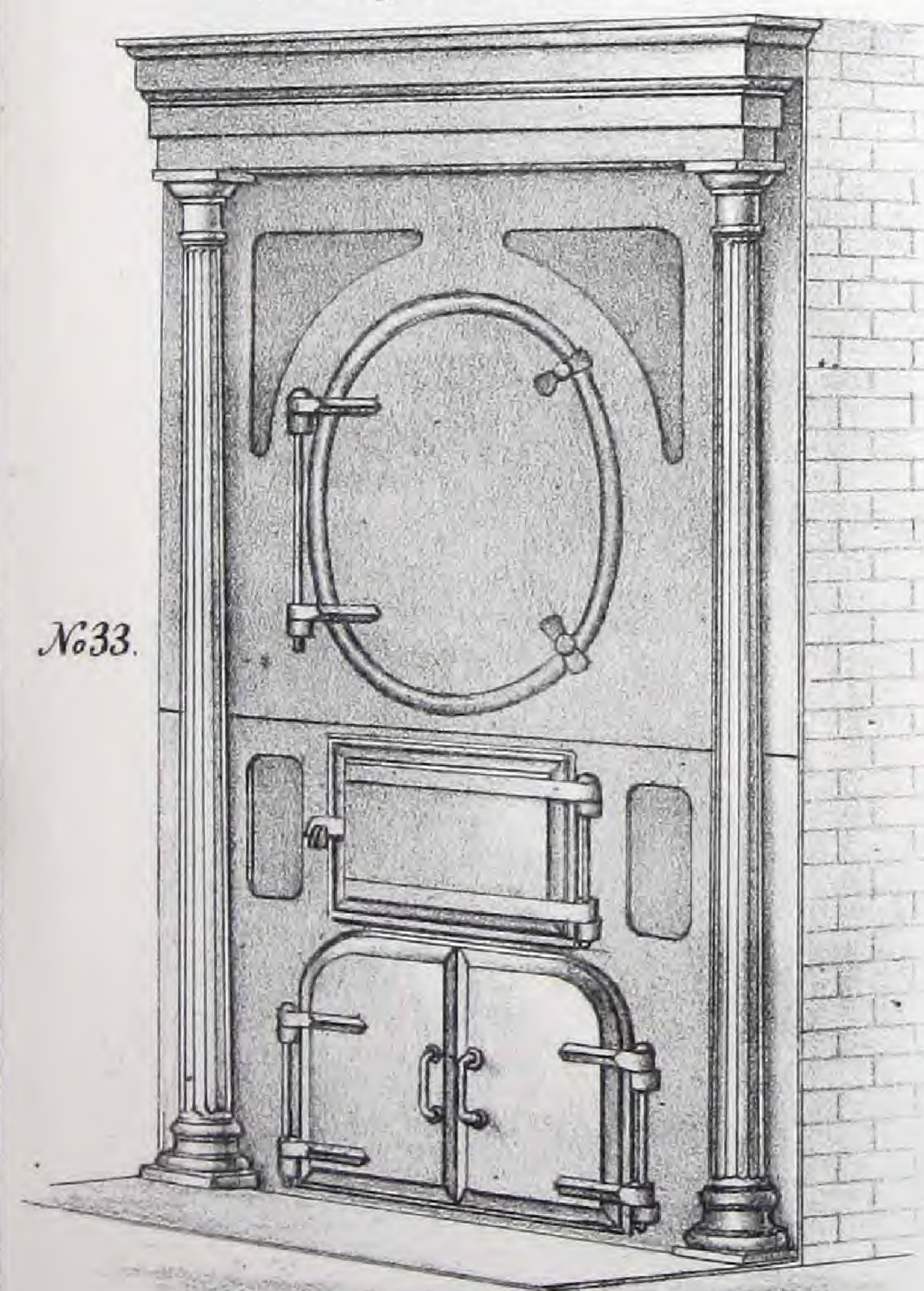
*Single Boiler Front
(hexagonal Columns)*

N^o32.



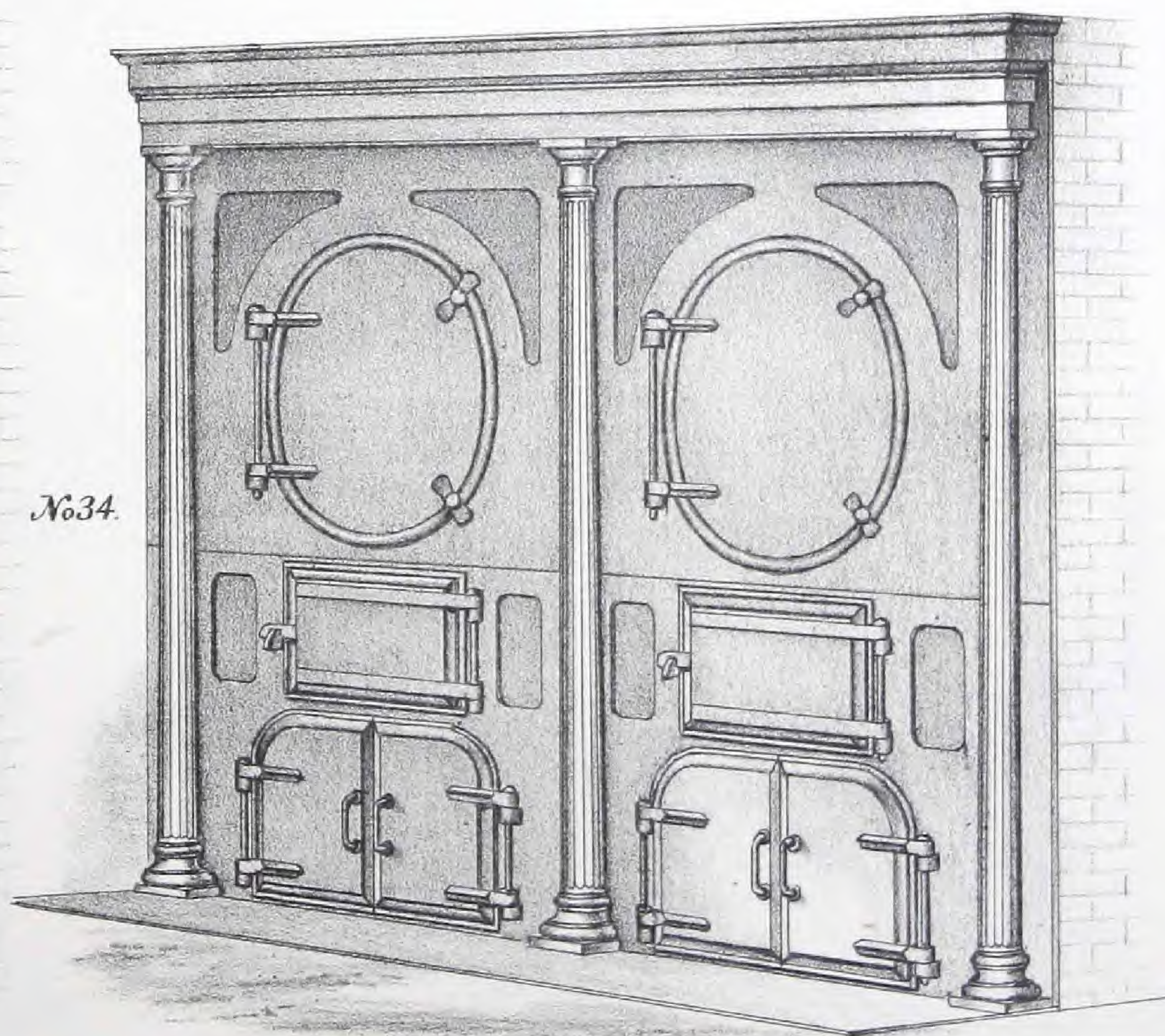
Double Boiler Front (hexagonal Columns)

N^o33.



*Single Boiler Front
(Fluted Columns)*

N^o34.



Double Boiler Front (fluted Columns).

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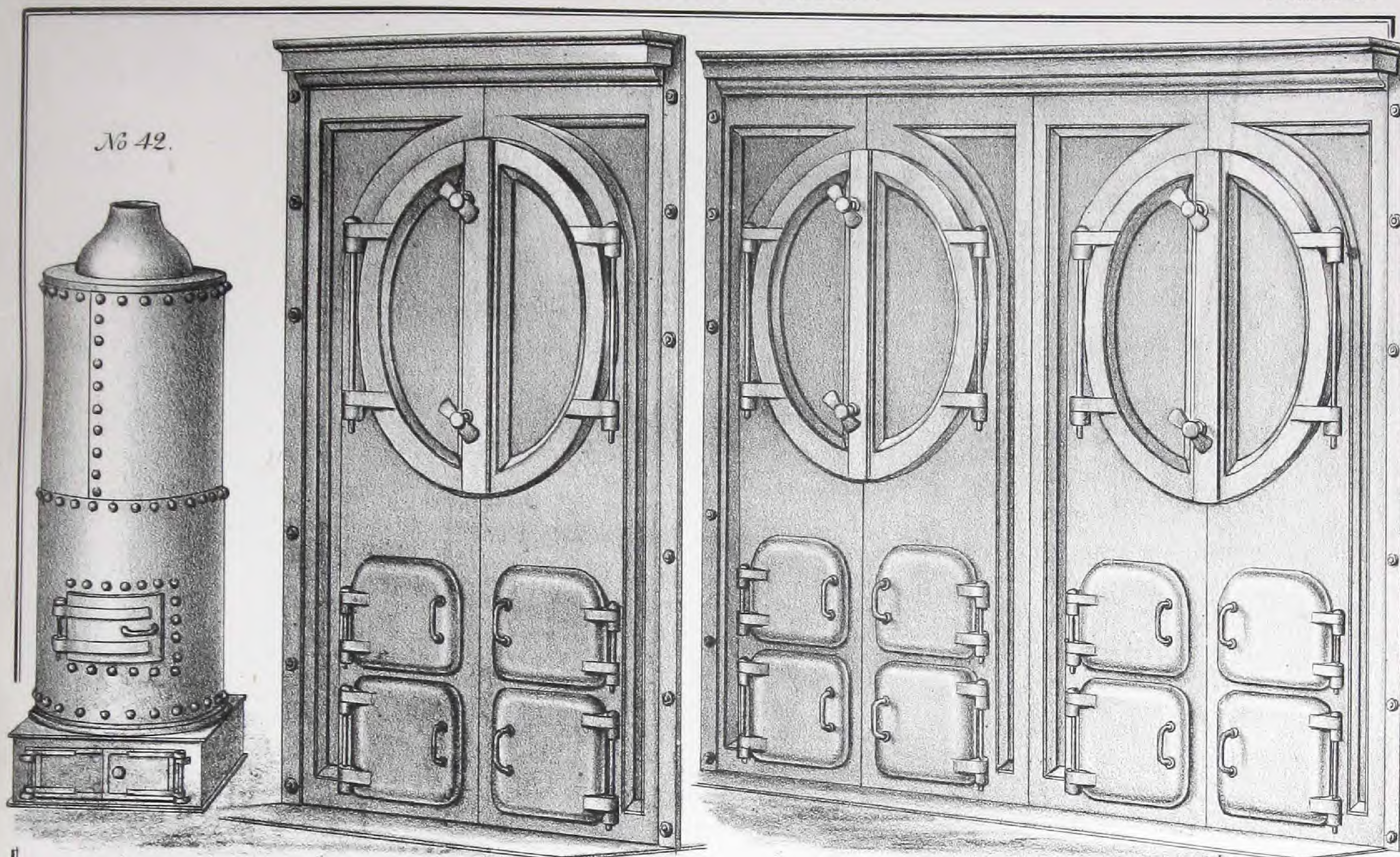
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MORRIS, TASKER & CO'S ILLUSTRATED CATALOGUE

10th EDITION.

CLASS SIXTH .

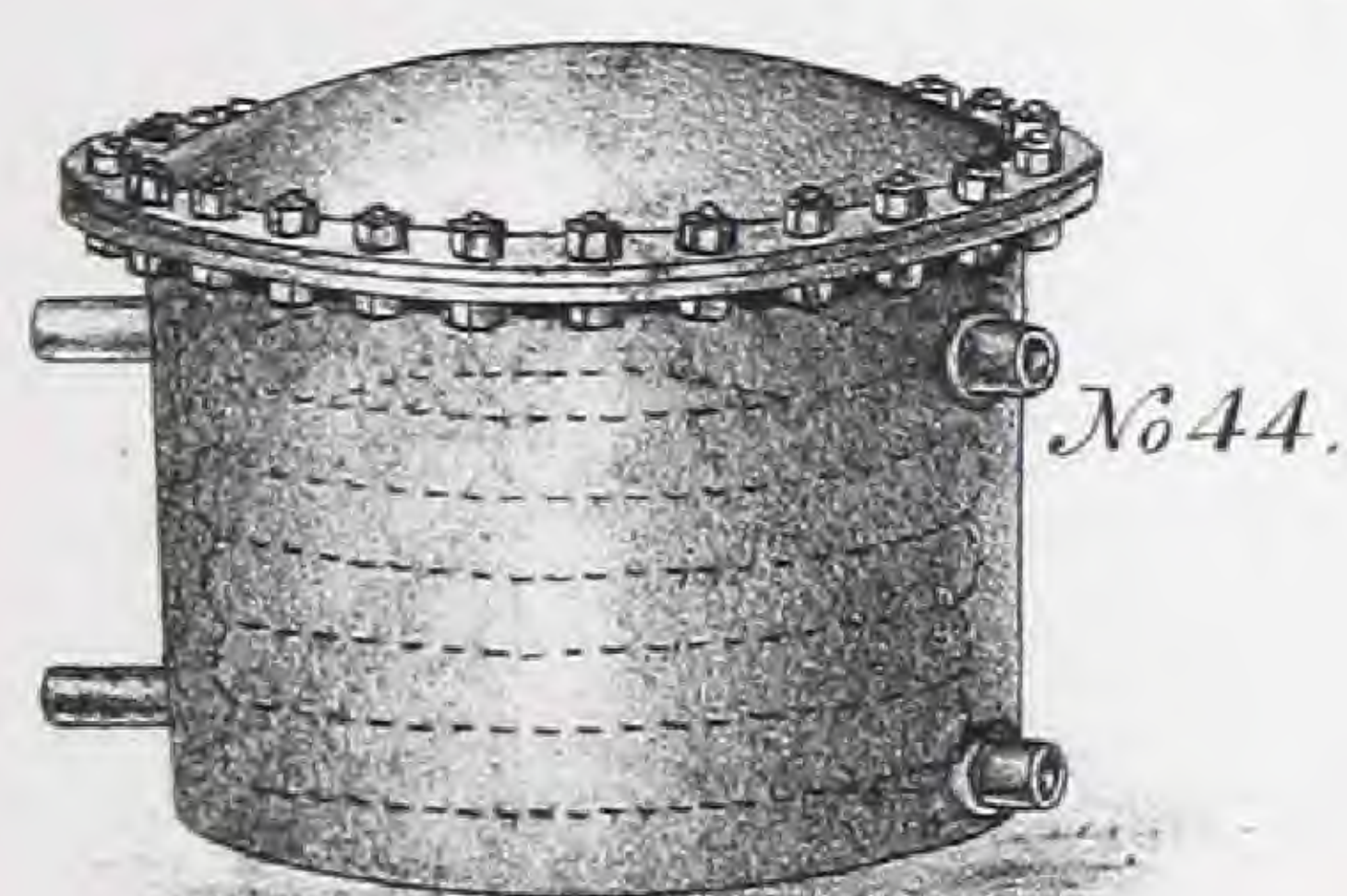
Plate 5.



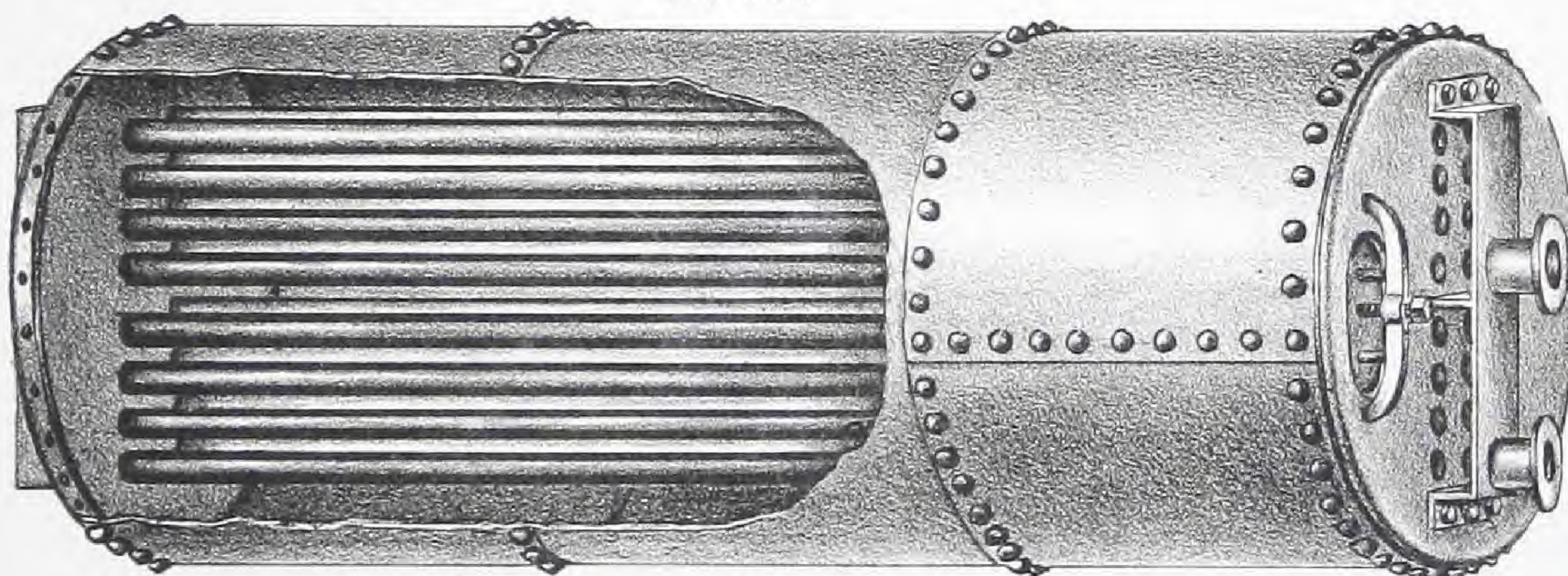
*Upright
Tubular Boiler.*

*No. 40. Single Boiler Front
(plain)*

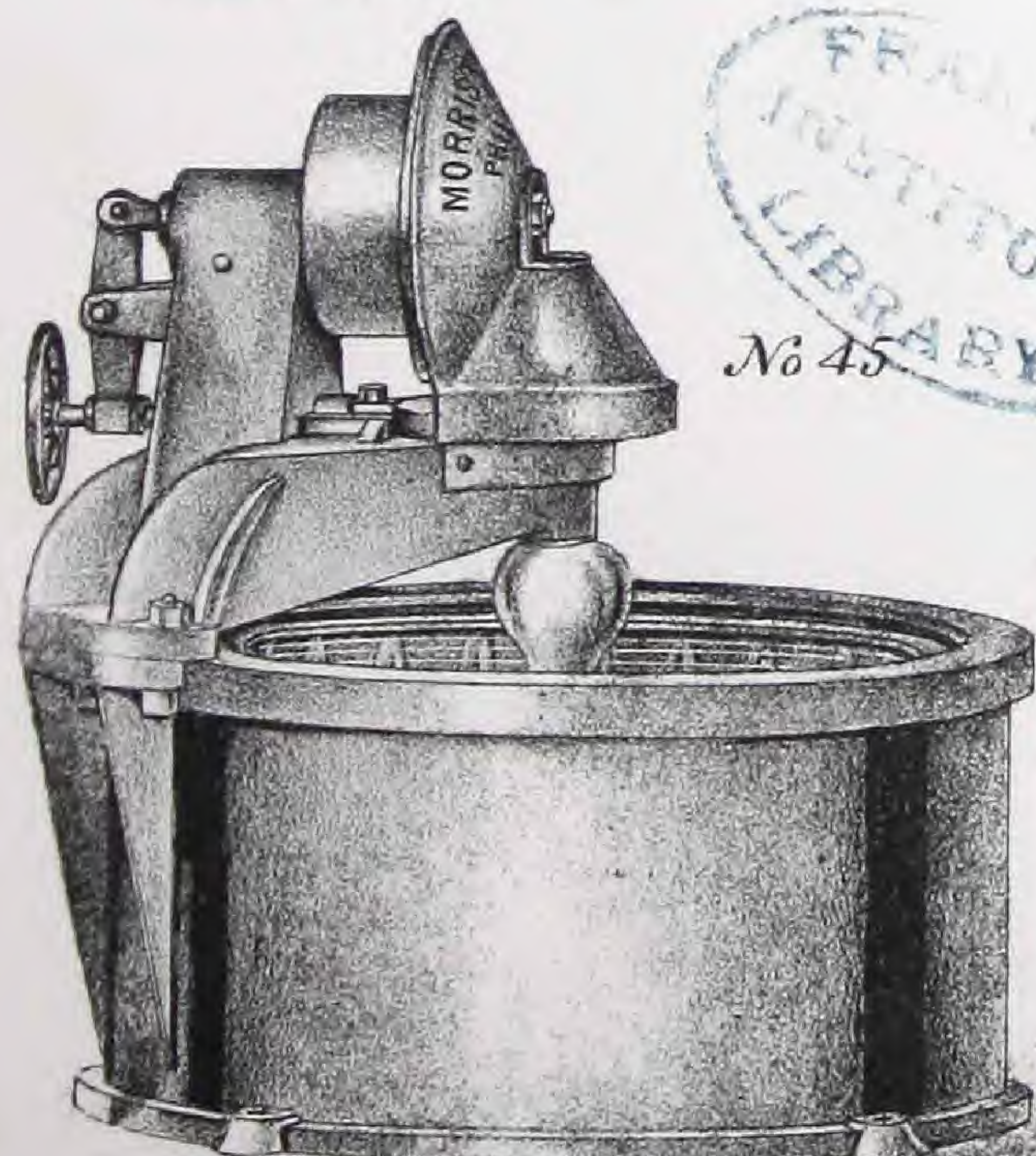
*No. 41. Double Boiler Front (plain.)
No. 43.*



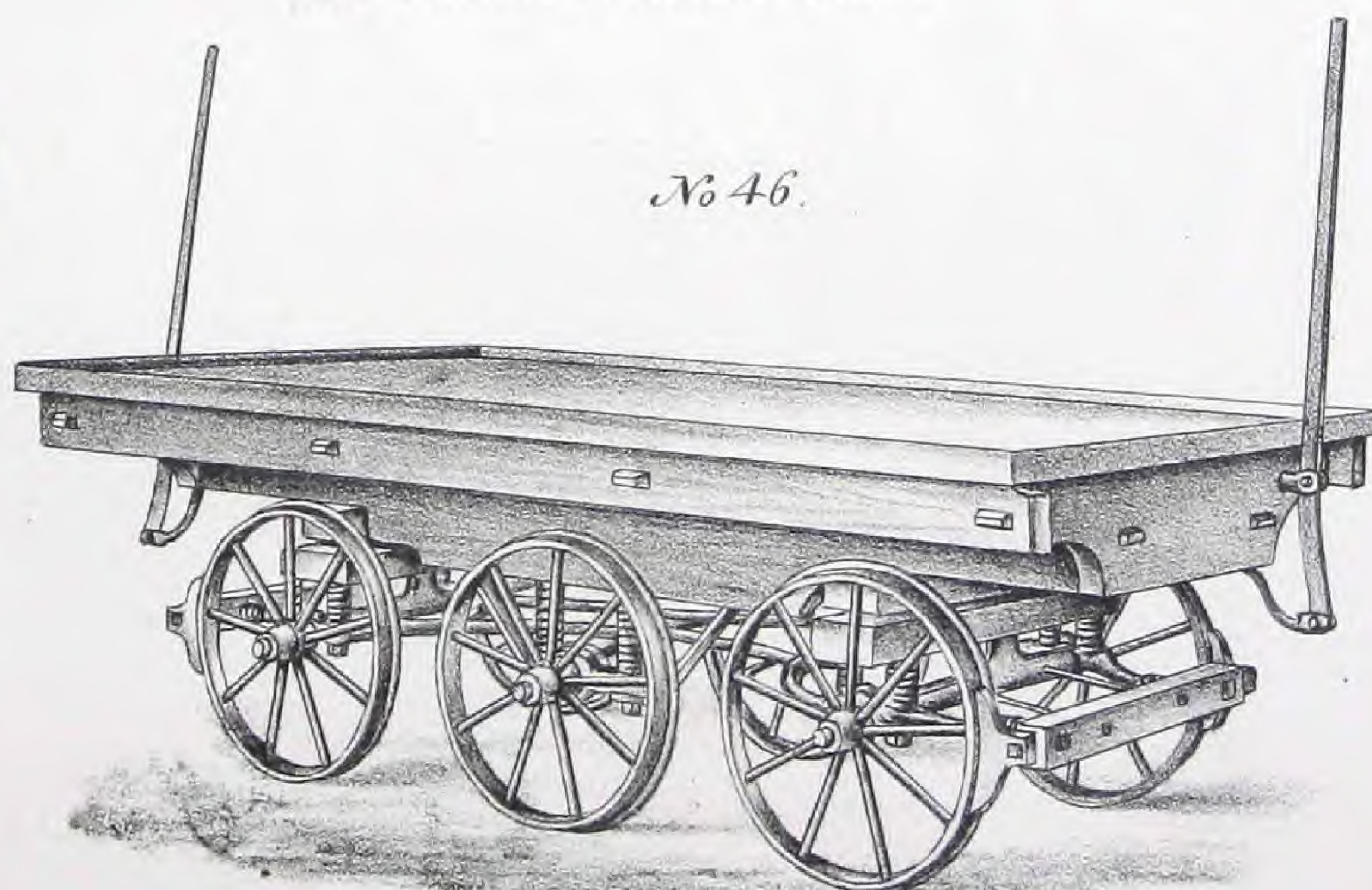
Coil Header.



Horizontal Tubular Boiler.



No. 2 & 3 Wringing Machines.



Hospital Food Car.

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Persons in ordering will please state the "Edition" they order from.

CLASS SEVENTH.

Every order for special articles must have accurate plans and dimensions attached, and no order, "same as before," will be received.

Any article for which no price is quoted on the list will be made only to special order, although such article may be shown in the illustrations.

HEATING APPARATUS AND MATERIALS. GREEN-HOUSE PIPE AND FITTINGS.

No.	PLATE	DIAMETER IN INCHES,		per foot,	3	4
1		Pipe, (lays 9 feet, measures 9 feet 2½ inches,)		per foot,	\$0 60	\$0 75
2		Evaporating Pipe, (4 feet 6 inches long,)		each,	3 50	4 50
3		Flanged Ell, faced and drilled, with bolts, { 3 in. flanges, 6½ in. diam. }		"	2 10	2 65
4		Flanged Bell, " " " { 3 " " 6½ " " }		"	1 80	2 25
5		Saddle Flanged Ell, drilled, with bolts, { 3 " " 6½ " " }		"	2 10	2 65
6		Eighth Bend,		"	1 00	1 35
7		Ell, (or bend,)		"	1 00	1 35
8		Plug,		"	25	35
9		Cap,		"	35	50
10		Reducers, (bell small end,)		"		1 50
11		Double Bell,		"	75	1 10
12		Sleeve,		"	45	60
13		Offset Pipe, bell one end, (offset, 9 inches,)		"	2 60	3 50
14		Return bend, bell one end, (3 in.—c. to c. 4¾ in.) (4 in. c. to c. 7⅝ in.)		"	1 80	2 40
15		Return Bend, bell both ends, (3 in.—c. to c. 4¾ in.) (4 in. { c. to c. 5½ in. }		"	1 70	2 25
16		Back Outlet Return Bend, bells both legs, outlet spiggot, (3 in.—c. to c. 4¾ in.) (4 in.—c. to c. 7⅝ in.)		"	2 10	2 80
17		Y Cross, bells on both outlets and one end of run,		"		4 20
18		Y Branch, bell on outlet and one end of run,		"		3 00
19		Cross, bells on both outlets and one end of run,		"	2 30	3 00
20		Tee, bell on outlet and one end of run,		"	1 50	2 00
21		Eighth Bend, extra length, (1 foot 6 inches extra length,)		"	1 90	2 50
22		Tee, Reducing, bell on outlet and one end of run,		"		2 00
23		Back Outlet Return Bend, bells on outlet and one leg, one leg spiggot, (3 in.—c. to c. 4¾ in.) (4 in.—c. to c. 7⅝ in.)		"	2 10	2 80
24		" " bell on outlet, both legs spiggot, (" " ") (" " ")		"	2 10	2 80
25		" " bells on all ends, (" " ") (" " ")		"	2 10	2 80
26		H Branch, (with bottom bell outlet,) two pair high, (" " ") (" " ")		"	4 80	6 00
Not drawn.		" " " three " (" " ") (" " ")		"	6 40	8 00
27		Three Branch Tee, (" " ") (" " ")		"	3 20	4 00
28		Two " " (" " ") (" " ")		"	2 40	3 00
Not drawn.		Four " " (" " ") (" " ")		"	4 00	5 00
		Flanged ends, bell ends, spiggot ends, or both outlets, as shown by dotted lines on 27 and 28, as may be ordered, additional price per end or outlet,		"	80	1 00
29		Expansion Pipe Roller, 2½ in. Roller, 2 ft. 8½ in. long, \$4.40; 1 ft. 7½ in. long, \$3.75.			1 45	1 80
30		Roller Stands, 3 pipes high by 2 pipes wide, (6 pipes,)			1 80	2 20
		" " 3 " " 3 " " (9 ")			1 80	2 20
Not drawn.		" " 4 " " 2 " " (8 ")			1 20	1 50
31		" " 2 " " 2 " " (4 ")			1 45	1 80
		" " 2 " " 3 " " (6 ")			1 80	2 20
		" " 2 " " 4 " " (8 ")			70	90
32		" " 2 pipes high by 1 pipe wide,			95	1 20
		" " 3 " " 1 " "			1 20	1 50
		" " 4 " " 1 " "			95	1 20
33		" " 2 top and 1 bottom, (3 pipes,)				

CLASS SEVENTH.—Continued.

GREEN-HOUSE BOILERS, CAST IRON DOORS AND FRAMES, DAMPERS.

No.	PLATE		
	2		
36		"Burbige & Healy" Corrugated Boiler, 28 in. diameter, suited for 750 ft. of 4 in. pipe, with one pair of flow and return branches,	\$ 97 00
36		" " " " " " " " " " " " two " " " "	100 00
37		" " Ribbed, " 20 in. " " 500 ft. of " " " " one " " " "	67 00
37		" " " " " " " " " " " " two " " " "	70 00
38		" " " " 16 in. " " 275 ft. of " " " " one " " " "	47 00
38		" " " " " " " " " " " " two " " " "	50 00
38		Check Plates, for 28 in. boiler, \$2.00; for 20 in. boiler, \$1.25; for 16 in. boiler, \$1.00.	
39		Sectional Ring Boiler, 20 in. diameter, suited for 675 ft. of 4 in. pipe, with one pair of flow and return branches,	70 00
39		" " " " " " " " " " " " two " " " "	70 00
40		Portable Boiler-setting, galvanized sheet iron case and fire brick lining, with grates, etc., etc., for setting complete, for 28 in. Burbige & Healy Boiler, including boiler,	205 00
40		" " " " " " " " " " " " 20 in. " " " "	160 00
40		" " " " " " " " " " " " 16 in. " " " "	135 00
40		" " " " " " " " " " " " 20 in. Sectional Ring Boiler, including boiler,	160 00
41		Green House Single Wedge Valve, for shutting any portion of apparatus, (all surfaces brass,)	10 00
42		" " Throttle Valve, for regulation only,	5 00
43		" " Box Valve, for shutting off any portion of apparatus,	9 00
44		Dust Door for Burbige & Healy Boilers; Frame, 8×8 in.; Opening, 5½×5½ in.,	60
45		Fire Front, 2 ft. 5 in. high, by 1 ft. 7 in. wide; Fire Door, 12 in. high, by 15 in. wide; Ash Door, 10 in. high, by 15 in. wide, fitted,	6 50
45		" 2 ft. 3½ in. " 1 ft. 5 in. " " 12 in. " 12 in. " " 9 in. " 12 in. " "	5 60
45		" 1 ft. 8 in. " 1 ft. 0 in. " " 8 in. " 8 in. " " 6½ in. " 8 in. " "	2 00
46		Fire Front, 2 ft. 11 in. high, by 2 ft. 4 in. wide, "Sylvester" doors, (with Dead Plates;) Fire Door, 9 in. high, by 11 in. wide, Ash Door, } 12½ in. high, by 11 in. wide, fitted, .	23 00
46		Frame, 3 ft. high, by 2 ft. 5 in. wide, by 4½ in. deep, (forming recess,)	
47		Bearer Bars, per pair, for 28 in. boiler, \$1.85; for 20 in. boiler, \$1.85; for 16 in. boiler, 70 cents.	
48		Grate Bars, per set, for 28 in. boiler, 24×24 in. \$7.10; for 20 in. boiler, 20×24 in. \$5.70; for 16 in. boiler, 14×18 in. \$3.50.	
49		Dead Plates, for Sylvester fronts,	2 00
52	PLATE 3	Bake Oven Door with dead plate, Frame, 1 ft. 11½ in. high, by 2 ft. 7½ in. wide; Opening, 1 ft. 4 in. high, by 1 ft. 11½ in. wide, fitted,	11 50
53		" " " " 1 " 2½ " 2 " 1 " " 1 " 0 " 1 " 6¾ " " "	7 70
54		" " " " 1 " 1 " 2 " 4½ " " 1 " 0 " 1 " 9½ " " "	9 50
55		Flue or Dust Door with Frame, Frame, 0 ft. 7 in. high, by 0 ft. 10½ in. wide; Opening, 0 ft. 5 in. high, by 0 ft. 6 in. wide, fitted with anchor bolts,	1 00
56		" " " " 1 " 7¾ " 1 " 7¾ " " 1 " 3¾ " 1 " 2 " " " "	4 60
56		" " " " 1 " 4½ " 1 " 4½ " " 11½ " 11½ " " " "	3 85
56		" " " " 1 " 0½ " 1 " 4½ " " 9 " 1 " 0½ " " " "	3 05
56		" " " " 11 " 1 " 2¾ " " 8½ " 11½ " " " "	2 15
56		" " " " 1 " 0¾ " 11 " " 10 " 8 " " " "	1 20
57		Manhole " " " 2 " 5 " 1 " 7½ " " 1 " 10 " 1 " 2½ " " " "	5 65
58		Flue or Dust " " " 1 " 2½ " 1 " 7 " " 1 " 0 " 1 " 4 " " " "	3 70
59		Ash Pit " " " 1 " 1½ " 1 " 1½ " " 9½ " 9½ " " " "	2 30
60		Manhole " " " 4 " 5 " 2 " 1 " " 4 " 0 " 1 " 8 " " " "	15 25
61		" " " " 4 " 10¼ " 1 " 8½ " " 4 " 6 " 1 " 4¼ " " " "	12 00
62		Brick Kiln Fire Front, " 2 " 9½ " 1 " 2 " Fire Door, 1 " 11 " 11 Ash Door, 1 ft. 2 in. by 11 in. fitted,	5 90
63		Flue or Dust Door with Frame, " 1 " 1 " 1 " 3½ " Opening, 10½ " 1 " 1 in. wide, fitted with anchor bolts,	2 10
64		" " " " 1 " 0¾ " 10½ " " 10½ " 8 " " " "	1 25
65		Smoke Flue Dampers (sliding), " 11¾ " 11¾ " " 8¾ " 8¾ in wide,	80
66		" " " " 10 " 2 " 0½ " " 4 " 1 " 7 " " " "	3 90
67		" " " " 1 " 10½ " 1 " 2 " " 10 " 10 " " " "	6 35
68		" " " " 1 " 6 " 1 " 0 " " 7¾ " 7¾ " " " "	4 00
69		" " (throttle,) " 1 " 4½ " 1 " 0½ " " 1 " 4 " 1 " 0 " box frame,	4 25
69		" " " " 3 " 5½ " 1 " 5 " " 3 " 0 " 1 " 0 " flat " "	12 00
69		Arrow and Quadrant, radius 6 inches,	1 25
69		Damper Rods and Tubes, to accompany 69, at per foot of length, ¾ in. 30 cents; 1 in. 45 cents.	
70		Sash-lifting Apparatus, 1¼ in. tube shaft, for first window, \$4.50, and each additional window, \$1.75.	
70		" " 1 in. " " 3.50, " " 1.25.	
		Tube used extra,	

CLASS SEVENTH.—*Continued.*

HOUSE HEATING APPARATUS AND MATERIALS.

No.	PLATE		Nominal Dimensions.	Area of Grate.	Capacity. Number of feet of heating surface.	Cubic feet of space which can be heated varies with circumstances from	External radiating surface available for heating.	Price for either Anthracite or Bitum's Coal.
74	4	Tasker's Self-Regulating Hot Water Furnace,	36 inches. 30 " 24 " 20 "	9 ⁶ / ₁₀ square feet. 6 ⁵ / ₁₀ " 4 ⁵ / ₁₀ " 3 ¹ / ₁₀ "	2,775 square feet. 1,875 " 1,300 " 900 "	92,500 to 55,500 62,500 to 37,500 43,000 to 26,000 30,000 to 18,000	148 square feet. 133 " 125 " 115 "	\$775 00 673 00 540 00 455 00
IN ORDERING STATE WHETHER ANTHRACITE OR BITUMINOUS COAL IS USED.								
75		* Ribbed Radiators for hot water, 1 ft. deep, 3 ft. 6 in. long, 2 ¹ / ₄ in. wide, 15.2 sq. ft. radiating surface.						\$7 20
76		* Ribbed Radiators for steam heating, 9 in. deep, 3 ft. 6 in. long, 2 ¹ / ₄ in. wide, 12.2 sq. ft. radiating surface,						
		Number of feet of heating surface,					Inside radiators,	6 00
							Outside "	6 50
77		Radiator Elbows, for 3 inch pipe,						70
78		" Sockets, " "						60
79		" Tees, " "						80
80		" Caps, " "						45
81		" Separating piece, " "						45
		Radiator Tees, Sockets, Elbows, and Caps, are made with or without fillets, as required.						
82		Ring Packing, per pair,						10
		* In estimating the effective heating surface of Ribbed Radiators as compared with that of plain surfaces, the Hot Water Radiators should be taken at 12 square feet, and the Steam Radiators at 9 square feet.						
PLATE 5		Settings of Burbige & Healy's Green-House Boilers.						

NOTES ON HEATING.

RULES FOR THE HEATING OF GREEN-HOUSES IN THE VICINITY OF PHILADELPHIA, OR WHEREVER THE MINIMUM TEMPERATURE DOES NOT GO BELOW THE ZERO OF FAHRENHEIT.

Lowest temperature to be maintained in house,	45°	50°	60°	70°	80°	90°
Feet of glass or panel surface exposed, which will be heated by each foot of 4 inch Green-house pipe at the temperature of 200°,	5 ft.	4 ³ / ₄ ft.	3 ³ / ₁₀ ft.	2 ⁷ / ₁₀ ft.	2 ¹ / ₈ ft.	1 ³ / ₄ ft.

It is safe for ordinary green-house temperature to take an average of four feet of glass or panel surface to each foot of four inch pipe. The walls, if of stone, or of brick with an air-space, may be neglected. Eight square feet of nine inch brick wall calls for about one foot of four inch pipe to heat it. The exposure modifies this rule. Vertical North exposed glass walls should have 1 foot of pipe to 2 feet of glass; Vertical East or West glass walls 1 foot of pipe to 4 feet of glass; and Vertical South glass walls can be heated by 1 foot of pipe to 6 feet of glass—the horizontal glass surfaces needing the average of 1 foot of pipe to 4 feet of glass. For warming water for use in the house, the water of the heating circulation should not be taken. The proper arrangement is a transfer pipe led through the water trough.

Bottom heat tanks should have their heat supplied also by a transfer pipe from the circulation, and not be connected with the boiler directly. A bottom heat tank can have one line of 4 inch pipe laid in it for each 4 feet of width of the tank. Transfer pipes should be controlled by valves, to prevent too great absorption of heat in cold weather from the boiler.

RULES FOR THE HEATING OF DWELLING HOUSES.

For heating satisfactorily by low temperature currents, we can take for average city houses in blocks, three feet of radiating surface heated below the boiling point to each 100 cubic feet of space, but in exposed buildings as much as five feet of radiating surface to each 100 cubic feet of surface is needed.

The heating and ventilating flues should be ample. Both should enter the rooms at or near the floor; and, if possible, they should be on opposite sides of the rooms. The following dimensions of heating flues will insure a supply of warm air:

Height of bottom of Register above top of Radiators,	1 ft.	2 ft.	3 ft.	4 ft.	6 ft.	8 ft.	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	40 ft. and above.
Square inches of Flue needed for each square foot of Radiating surface which the room requires,	2 in.	1.41 in.	1.16 in.	1 in.	0.82 in.	0.71 in.	0.63 in.	0.52 in.	0.45 in.	0.40 in.	0.36 in.	0.32 in.

To the area obtained by this rule should be added for all flues 20 square inches, to compensate for the resistance of the mouth or discharge, or to give a practical magnitude to small flues. The ventilating flues follow the same law, only the height is to be taken from the Register to top of chimney. Example: A room of 3000 cubic feet capacity of average exposure, at 3 square feet of radiating surface to the 100 cubic feet of space, will need 90 square feet of radiating surface.

Suppose the Radiators be placed 2 feet below the Register, then $90 \times 1.41 = 126.9$; adding 20 square inches will give $= 146.9$, or a heating flue of 9×16 in sectional area should be provided.

Suppose the top of ventilating chimney to be 40 feet above the Register, then $90 \times 0.32 = 28.8$; adding 20 square inches $= 48.8$ or $9 \times 5\frac{1}{2}$ will be needed.

Boilers to supply heat to pipe or radiating surface as above, should have one square foot of grate surface, or area, to each 300 square feet of radiating surface; and there should be added to the grate surface given by this rule, one-third square foot, to give a practical area to the smaller grates.

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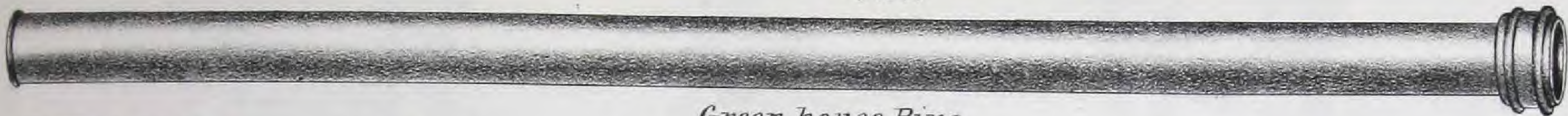
MORRIS, TASKER & CO'S ILLUSTRATED CATALOGUE.

10th EDITION

CLASS SEVENTH.

Plate 7.

No 1.



Green house Pipe.

No 3.



Flanged Ell.

No 4.



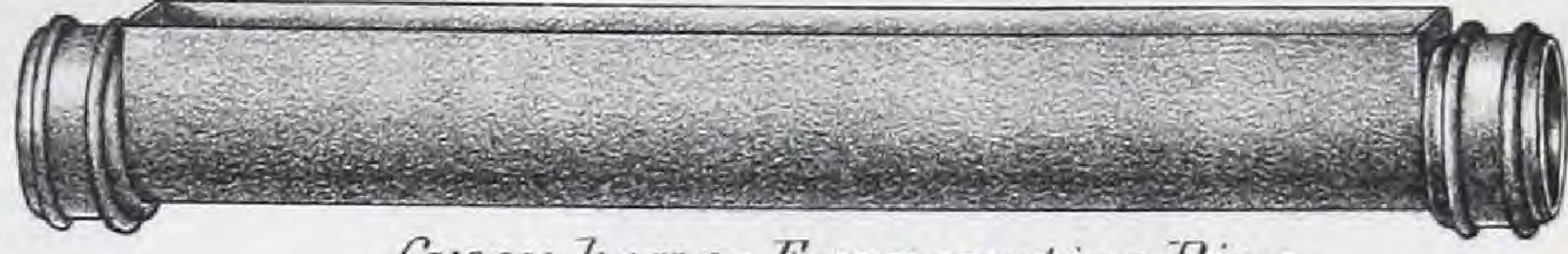
Flanged Bell.

No 5.



Saddle flanged Bell.

No 2.



Green house Evaporating Pipe.

No 6.



Eighth Bend.

No 7.



Ell or Bend.



Plug.



Cap.

No 10.



Reducer (Bell small end)

No 11.



Double Bell.

No 12.



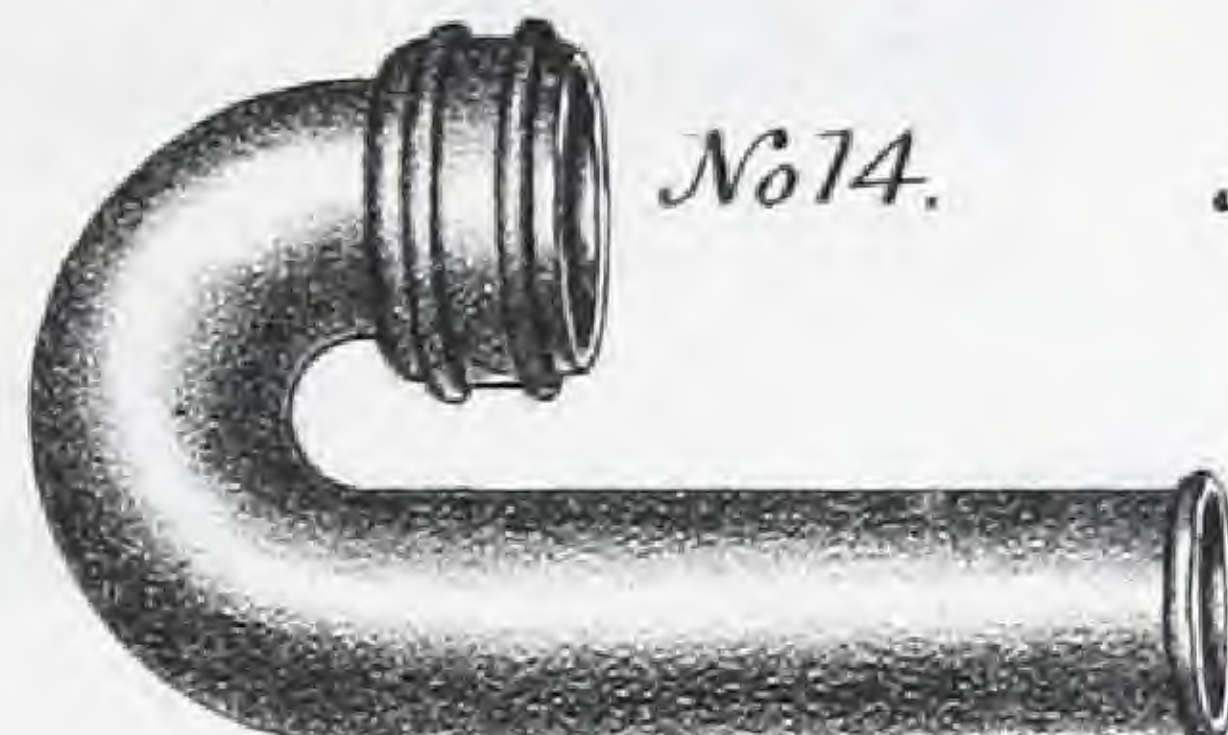
Sleeve.

No 13.



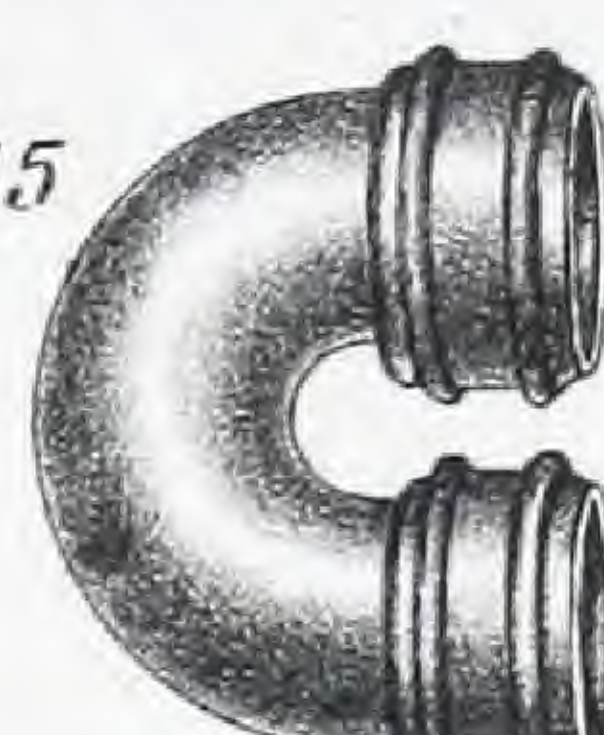
Offset Pipe, Bell one End.

No 14.



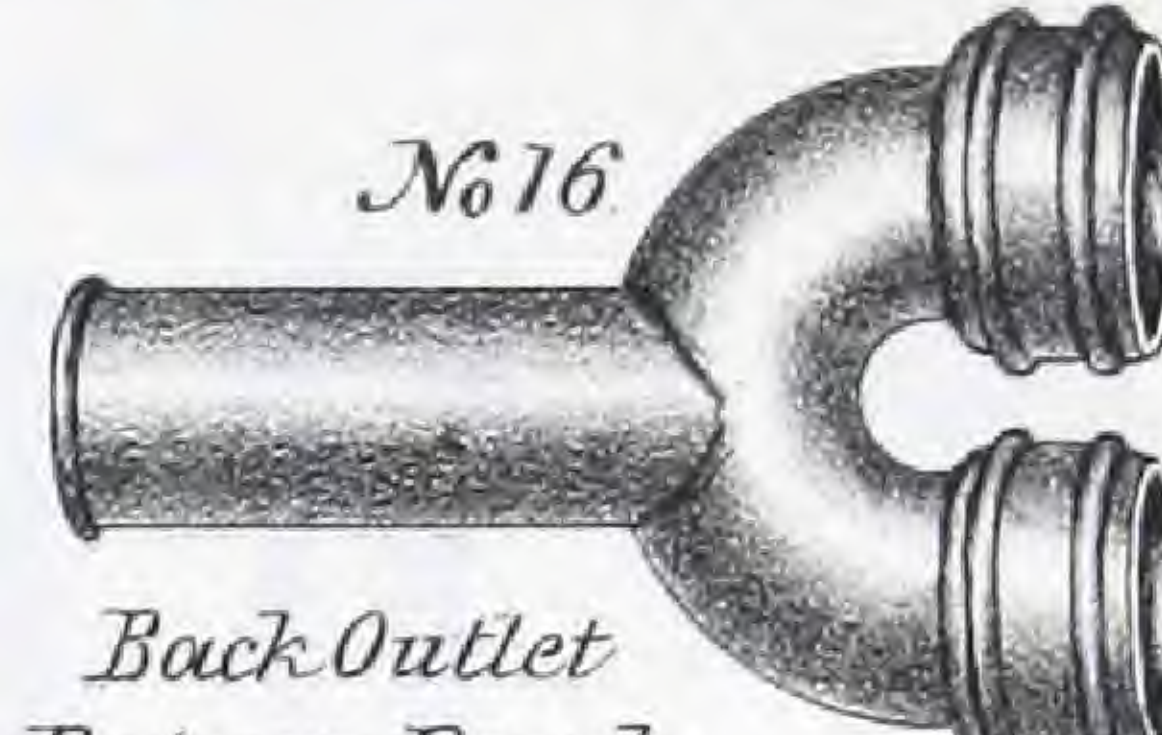
Return Bend, Bell one end.

No 15.



Return Bend
Bell both ends.

No 16.



Back Outlet
Return Bend.

No 17.



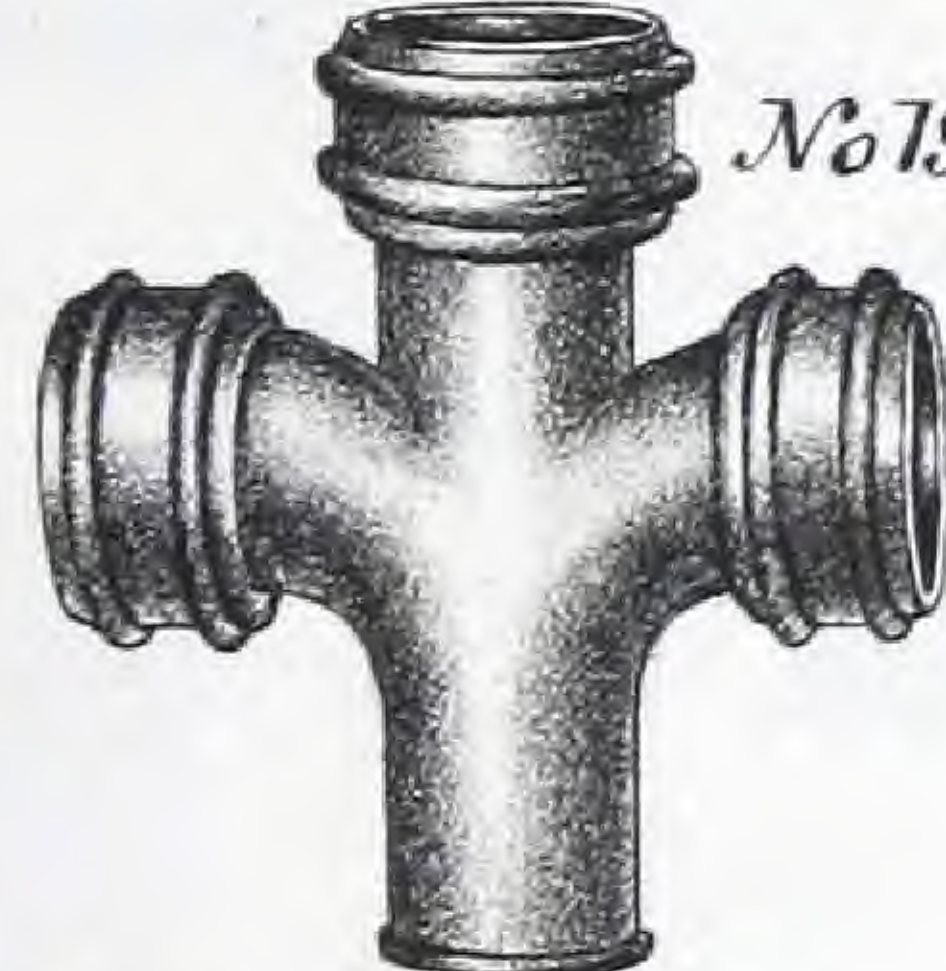
Y Cross.

No 18.



Y Branch.

No 19.



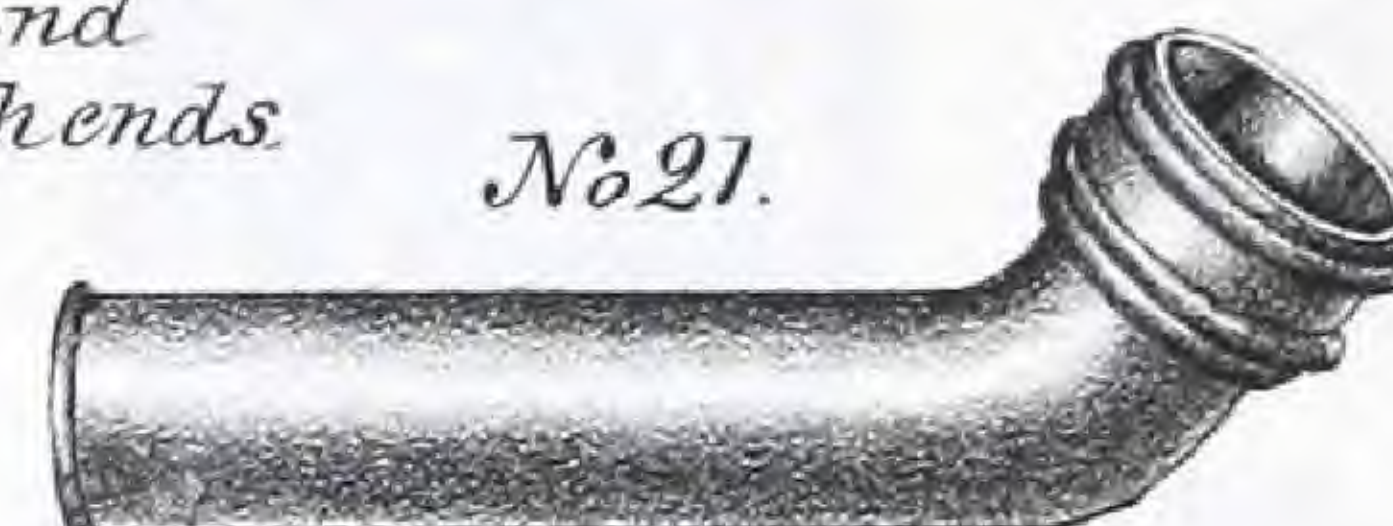
Cross, 3 Bell Ends.

No 20.



Tee, 2 Bell ends.

No 21.



Eighth Bend (extra length.)

No 29.



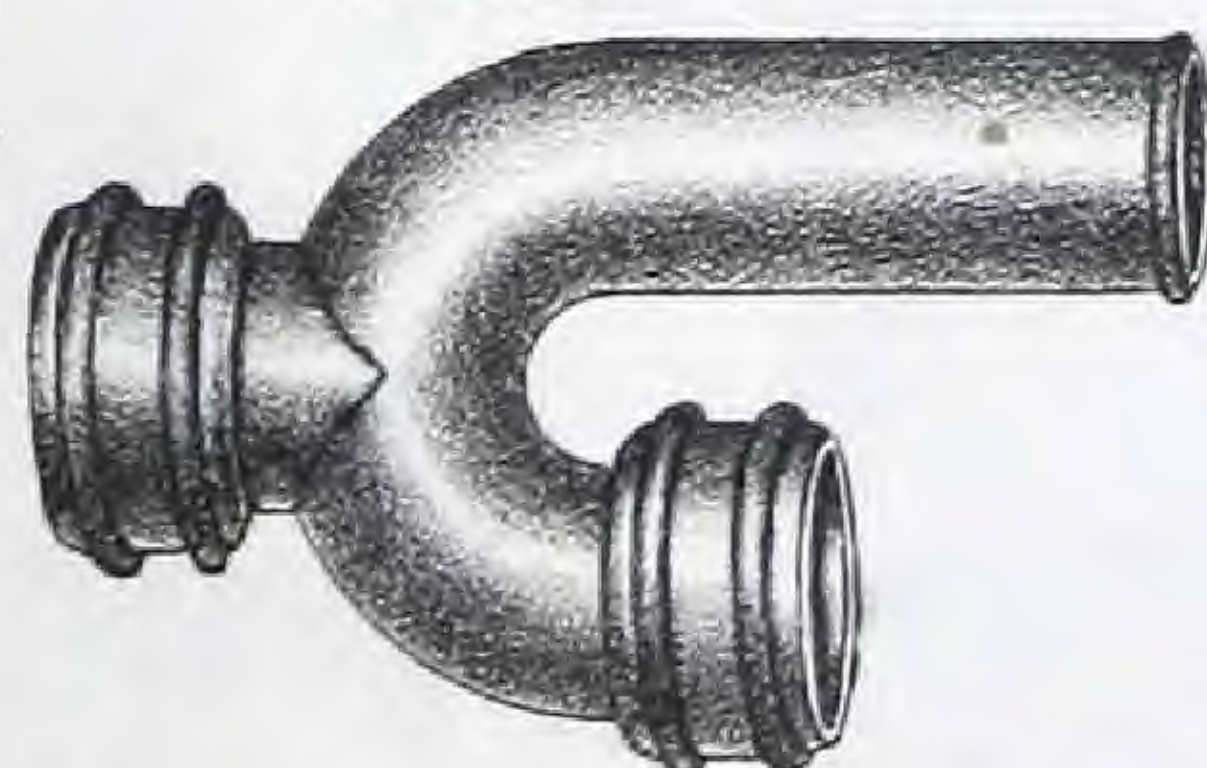
Expansion Pipe Roller.

No 22.



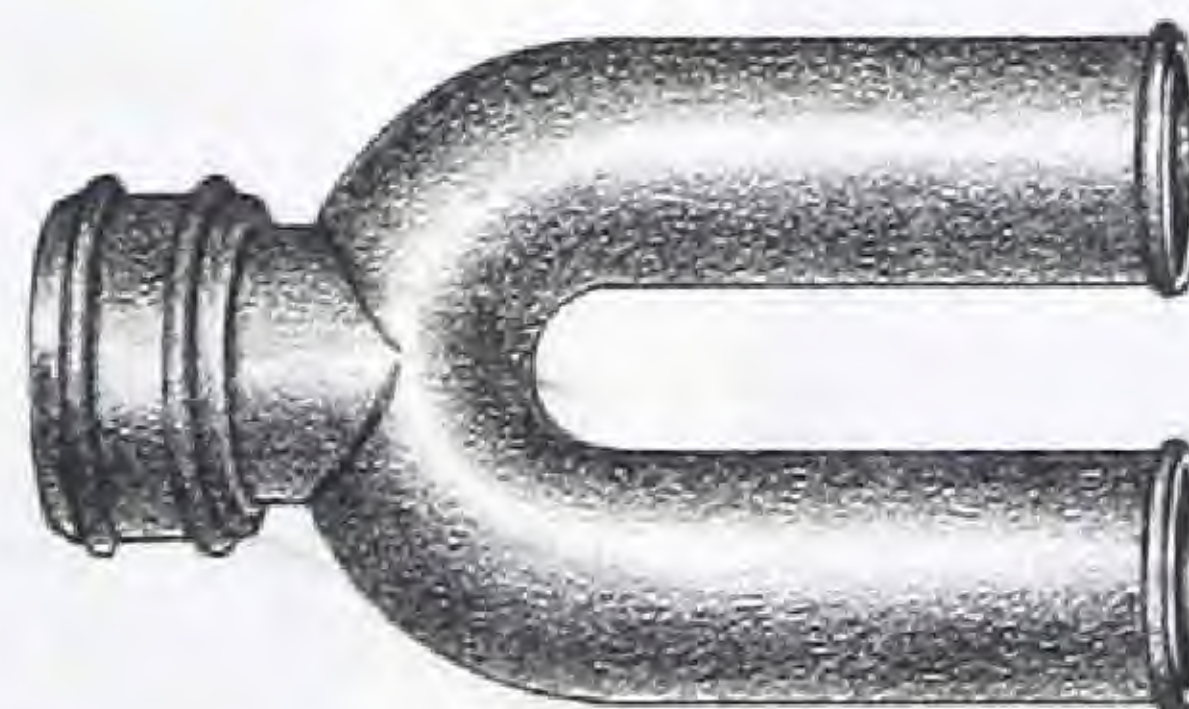
Reducing Tee.

No 23.



Back Outlet Return Bend.

No 24.



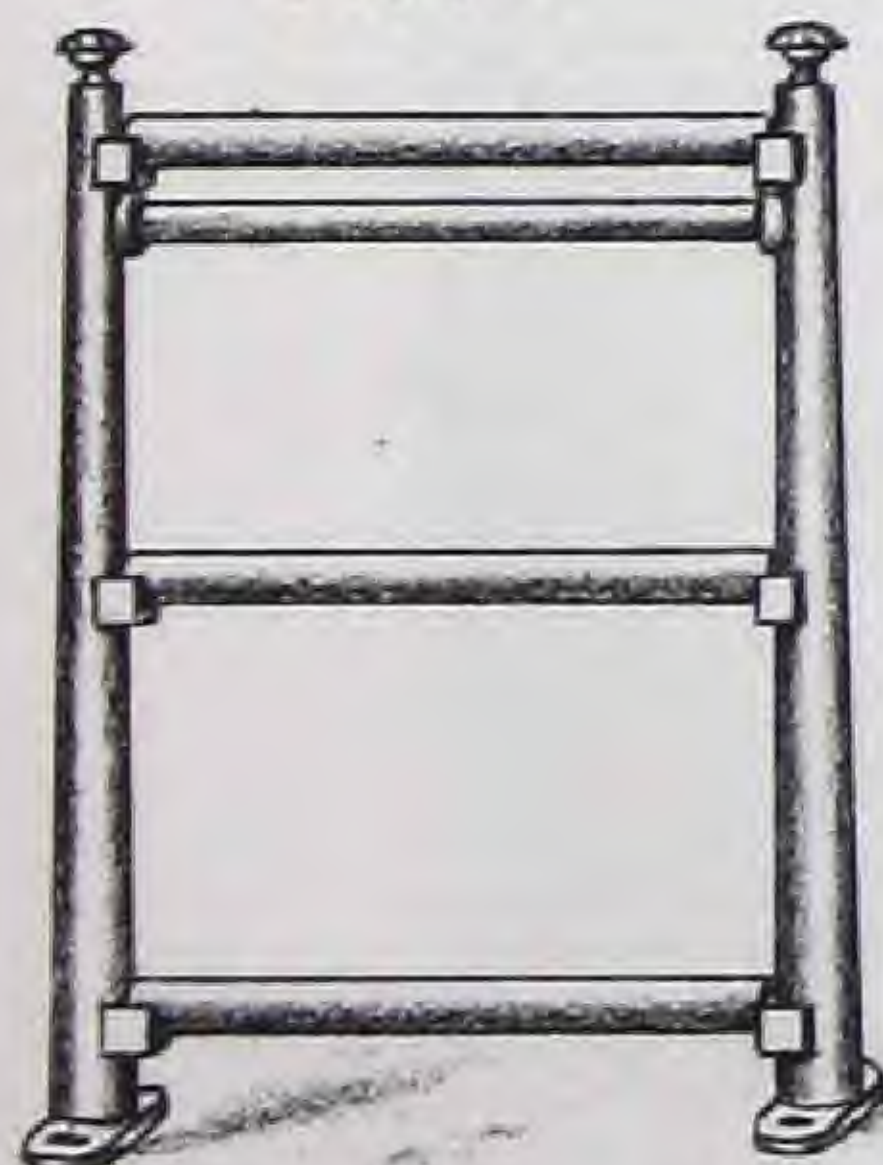
Back Outlet Return Bend.

No 25.



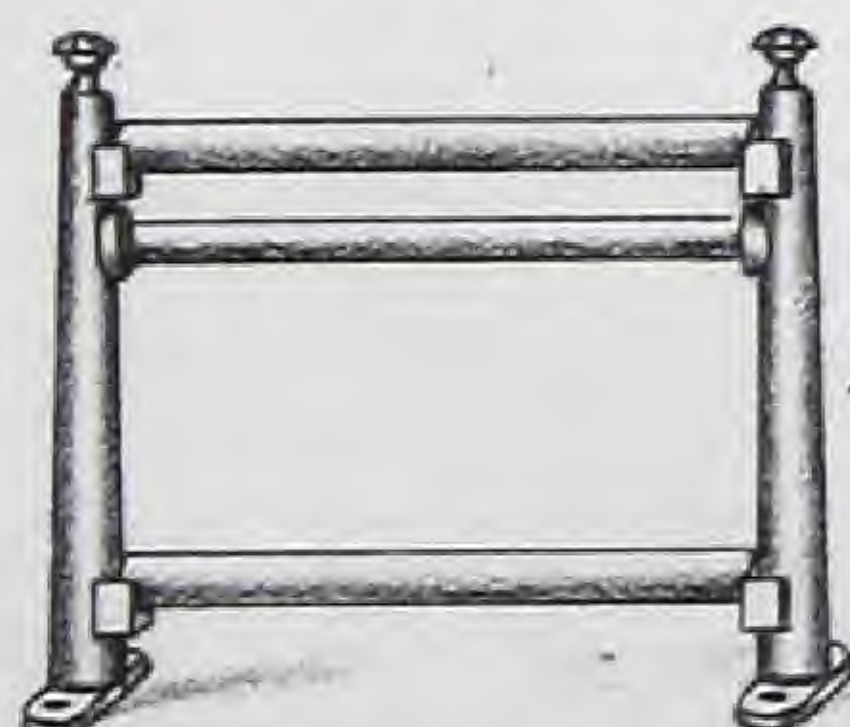
Back Outlet Return Bend.

No 30.



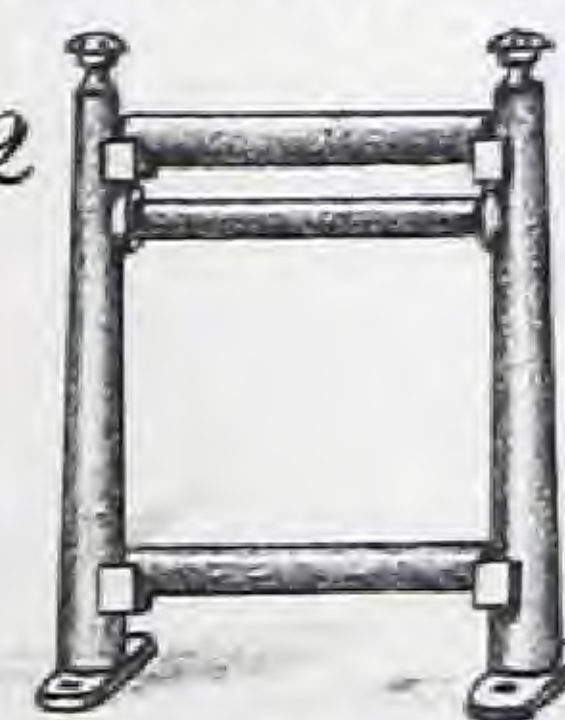
6 Pipe Roller Stand.

No 31.



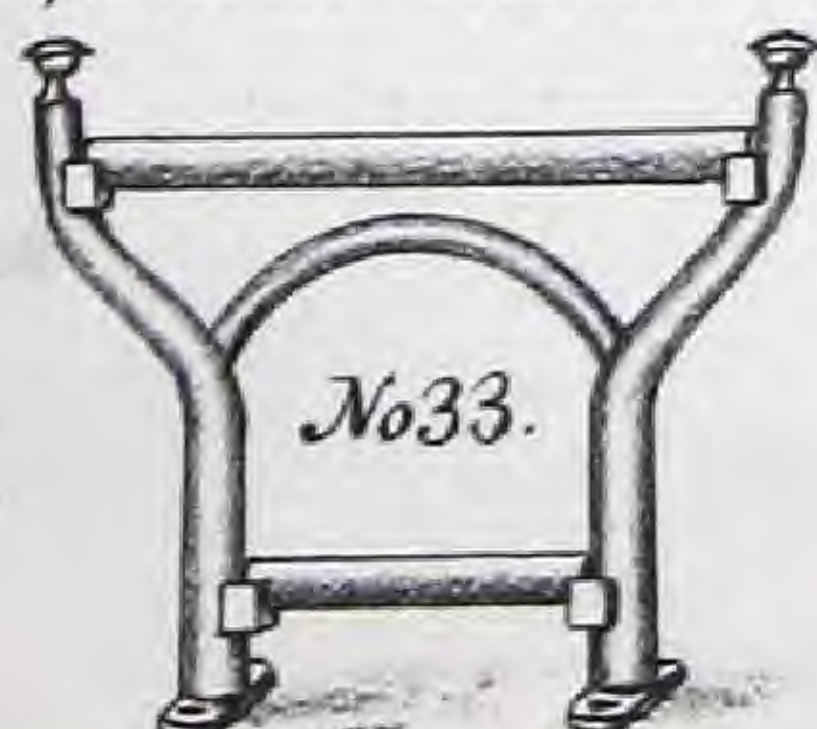
4 Pipe Roller Stand.

No 32.



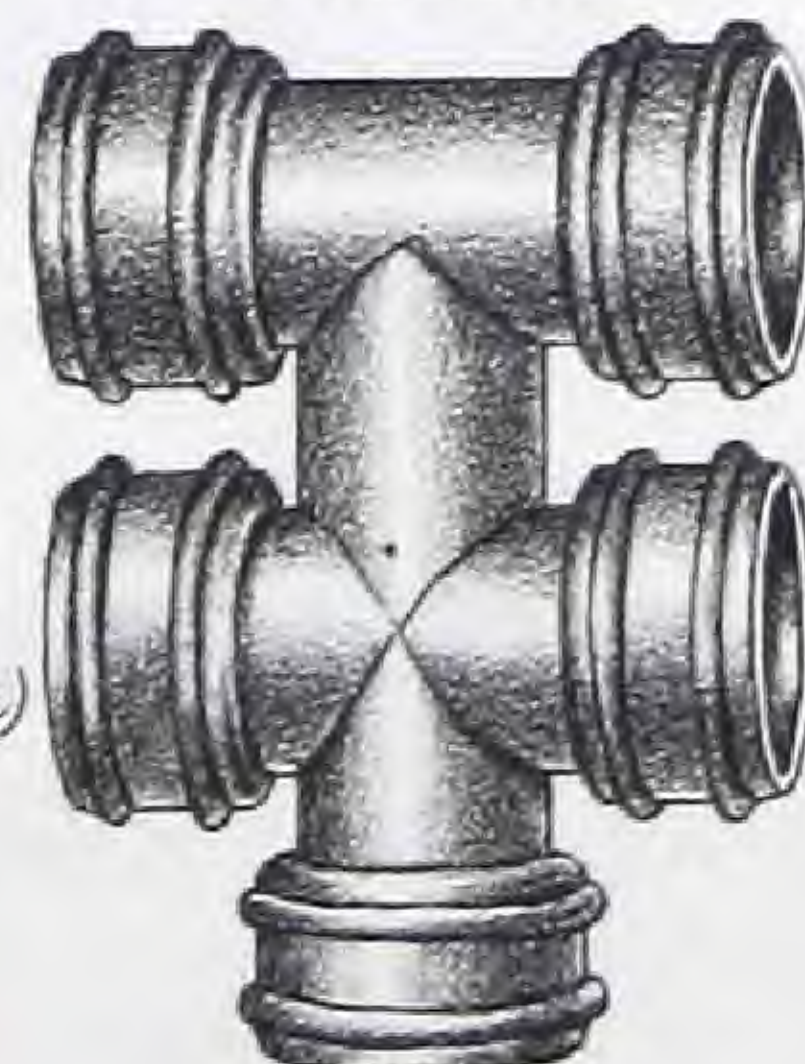
2 Pipe Roller Stand (2 high)

No 33.



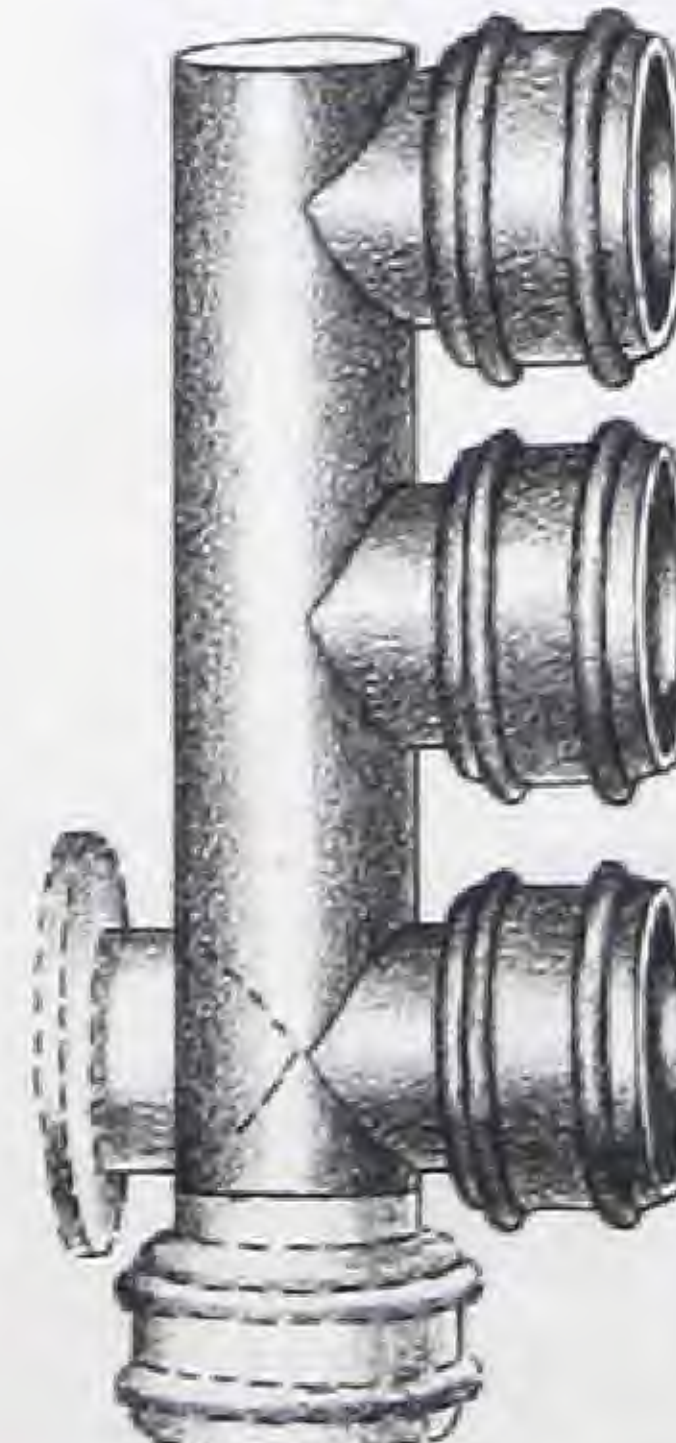
3 Pipe Roller Stand.

No 26.



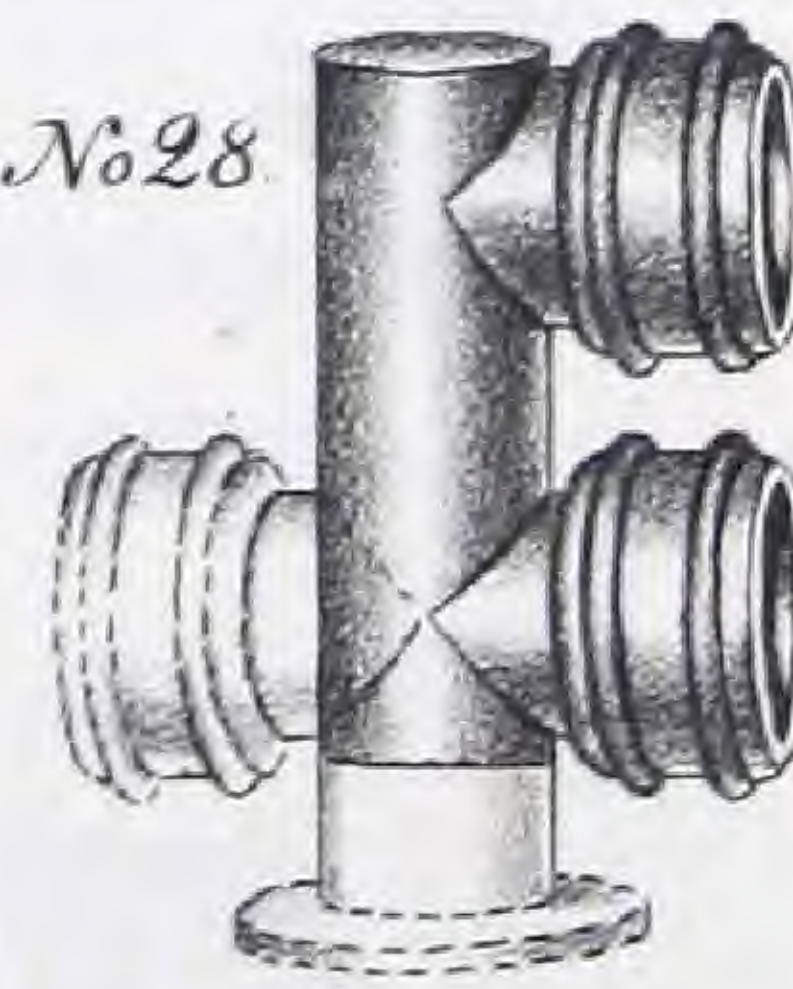
H Branch, with
bottom Bell Outlet.

No 27.



Three Branch Tee.

No 28.



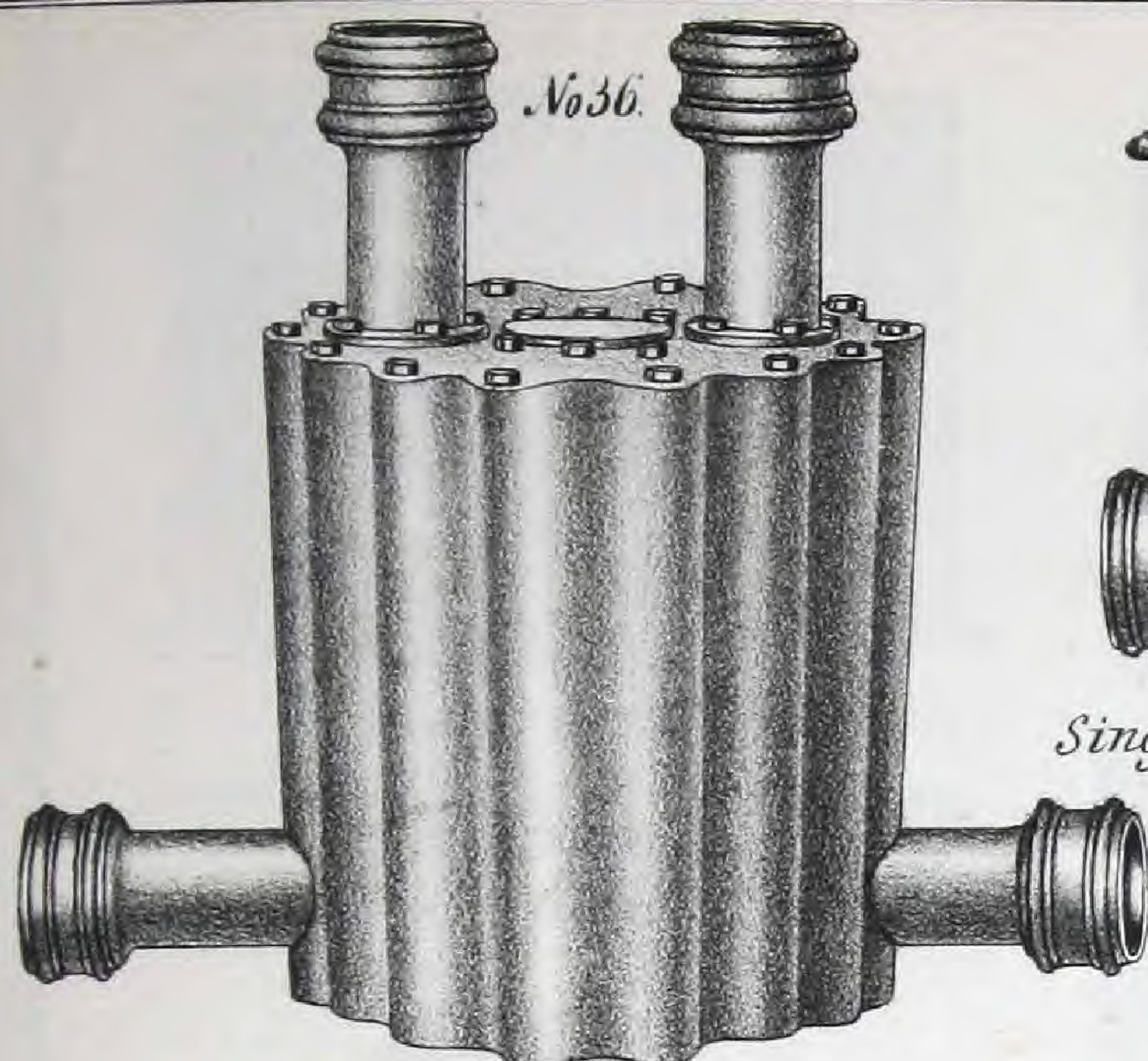
Two Branch Tee.

MORRIS, TASKER & CO'S ILLUSTRATED CATALOGUE.

10th EDITION

CLASS SEVENTH.

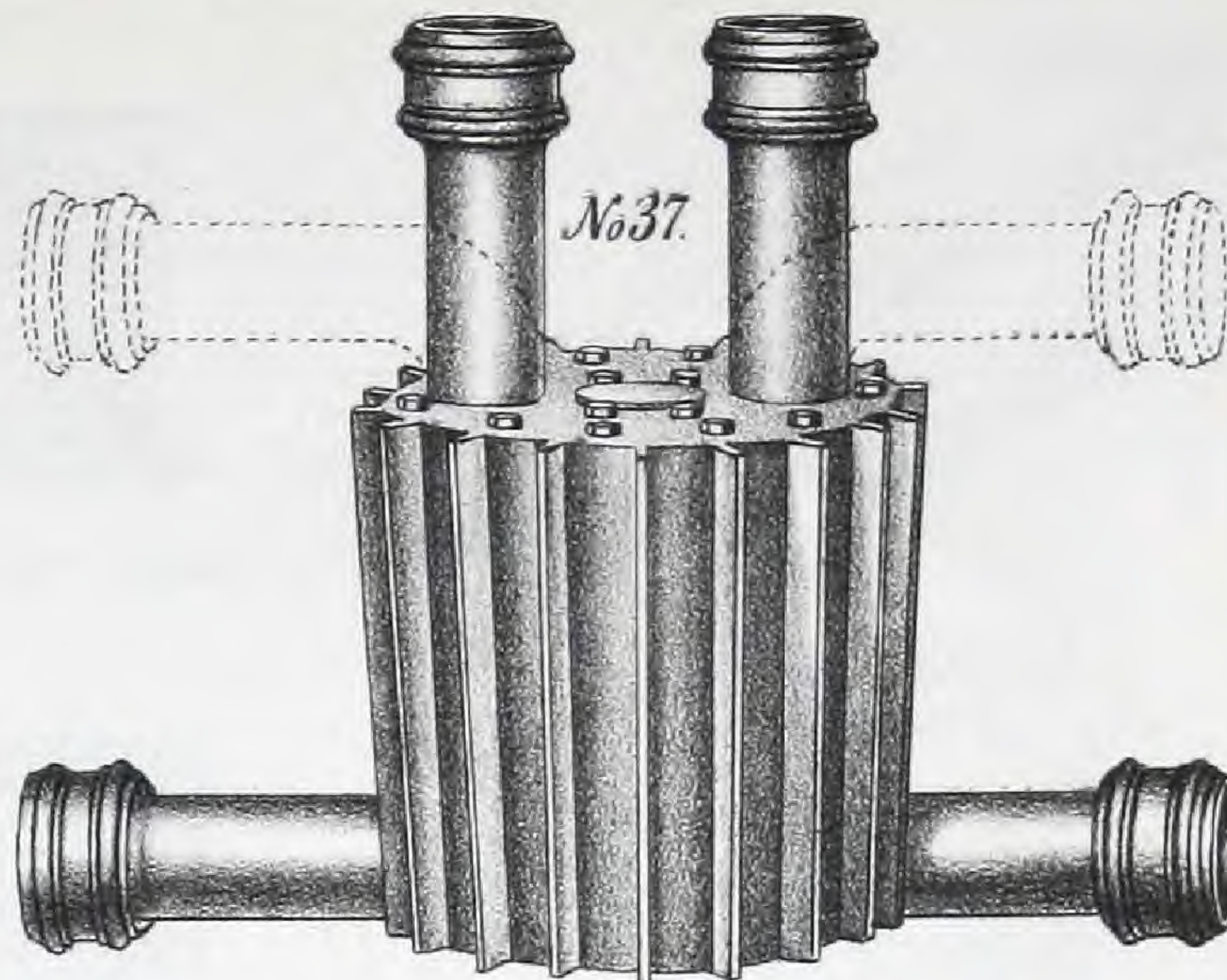
Plate 2.



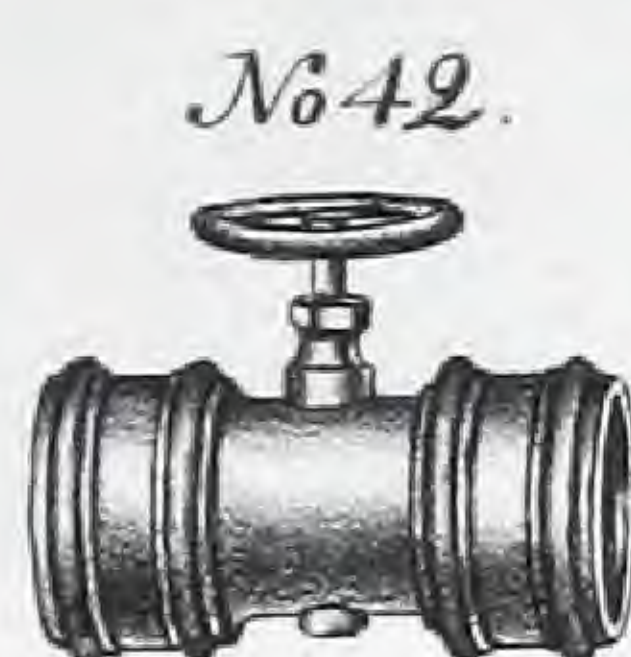
"Burbige & Healy" 28 inch Corrugated Boiler.



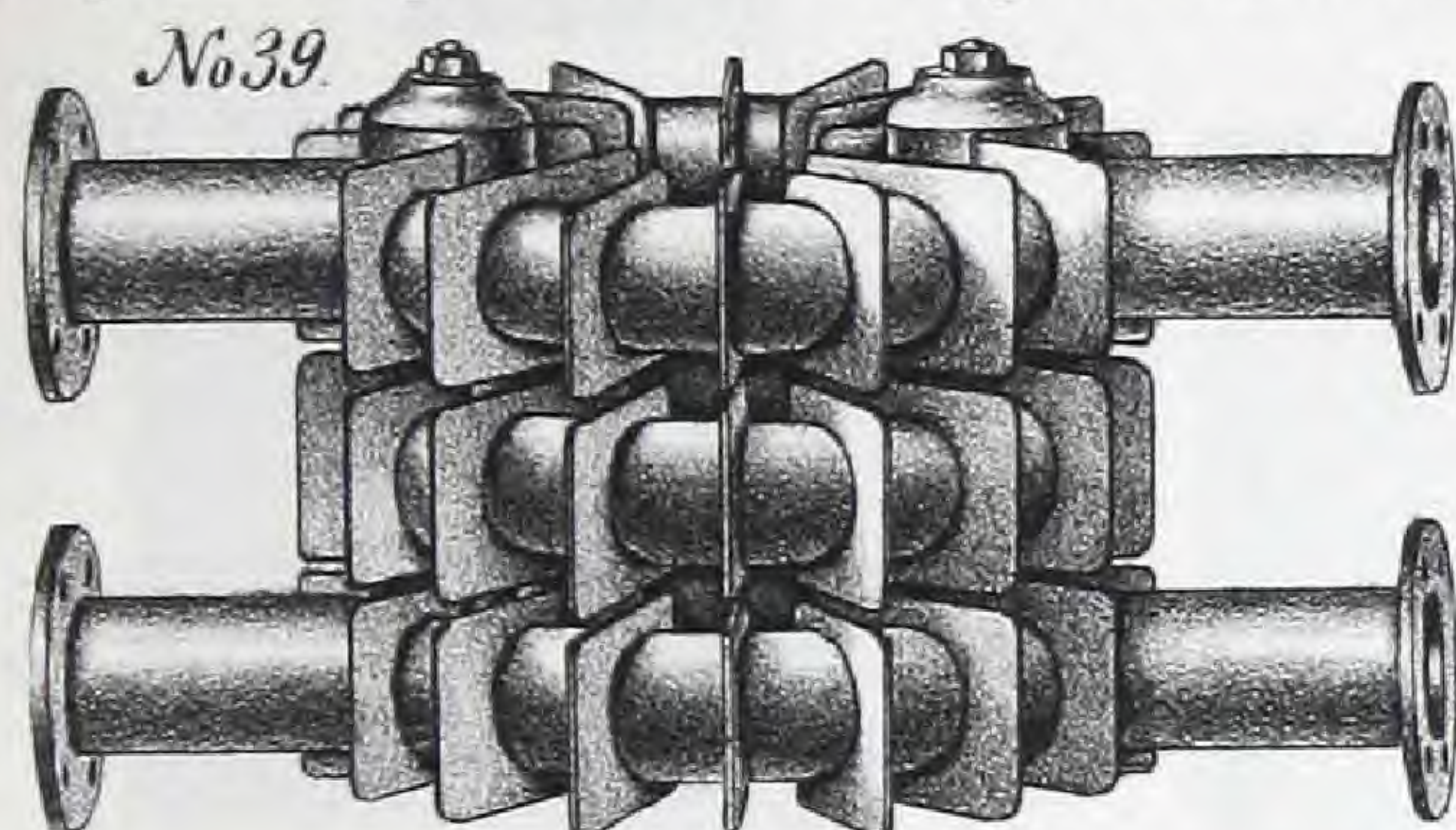
Single Wedge Valve



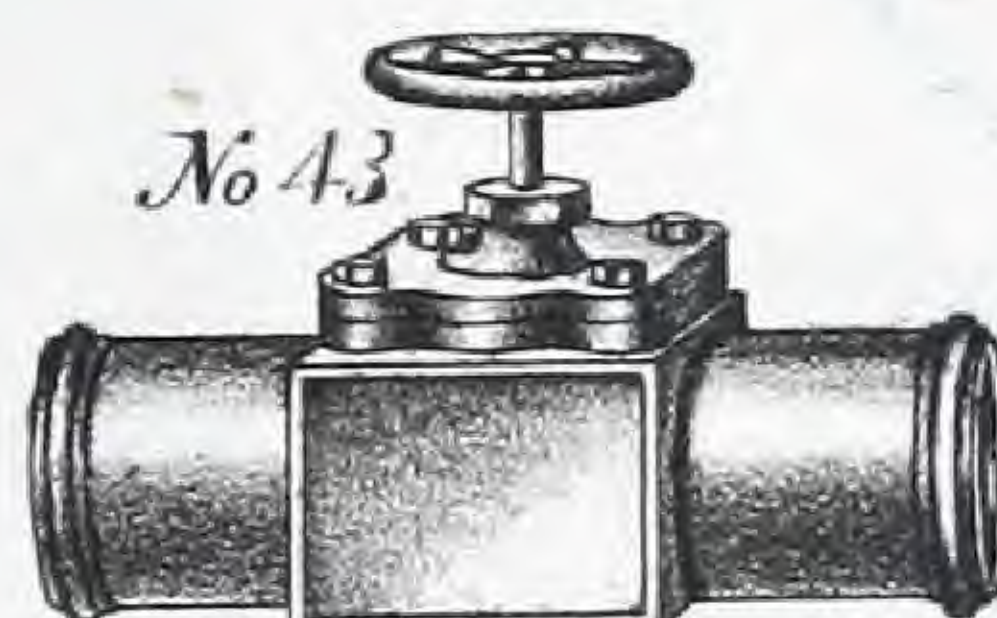
"Burbige & Healy" 20 inch Ribbed Boiler.



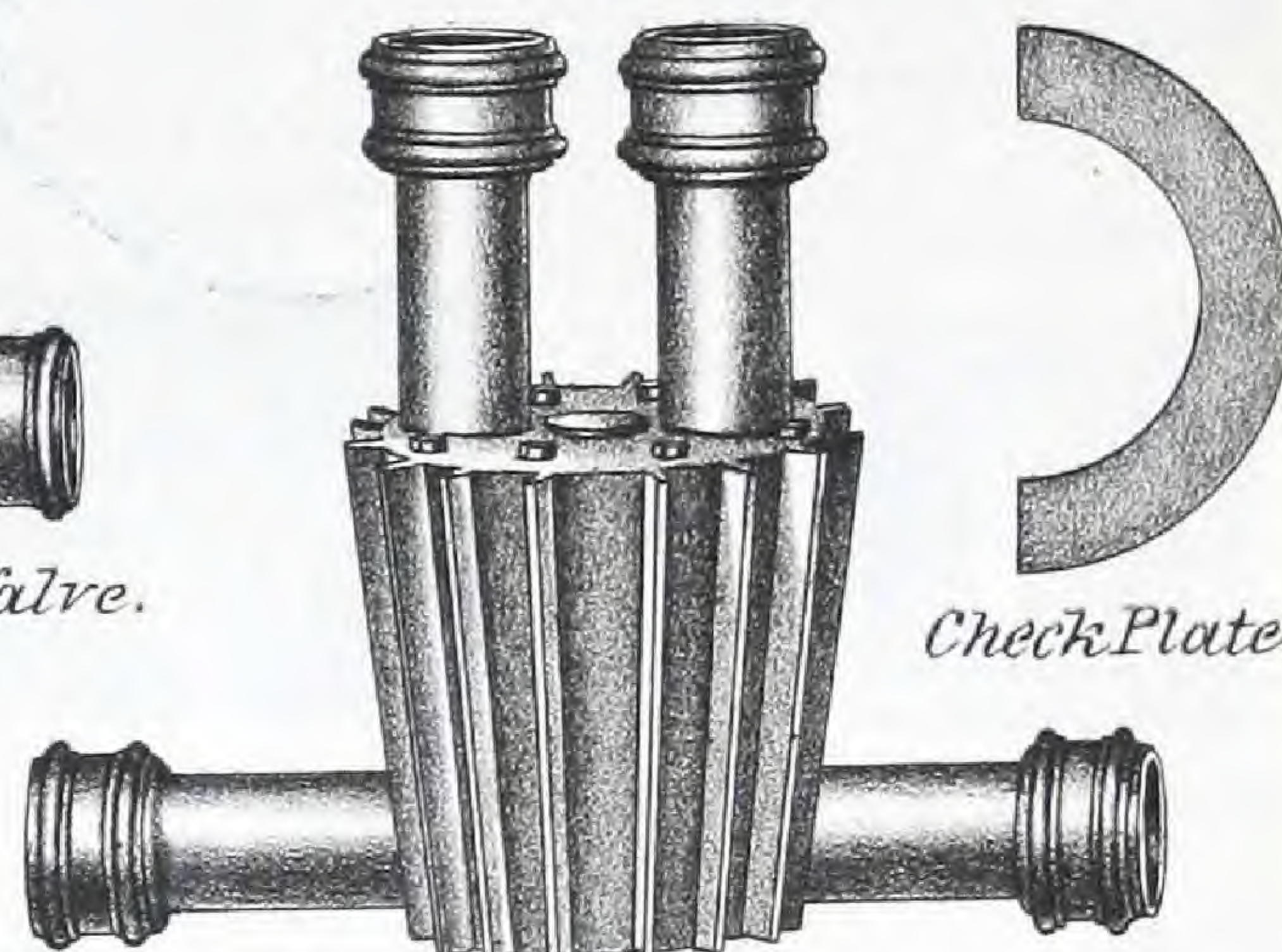
Throttle Valve.



Sectional Ring Boiler.



Green house Box Valve.

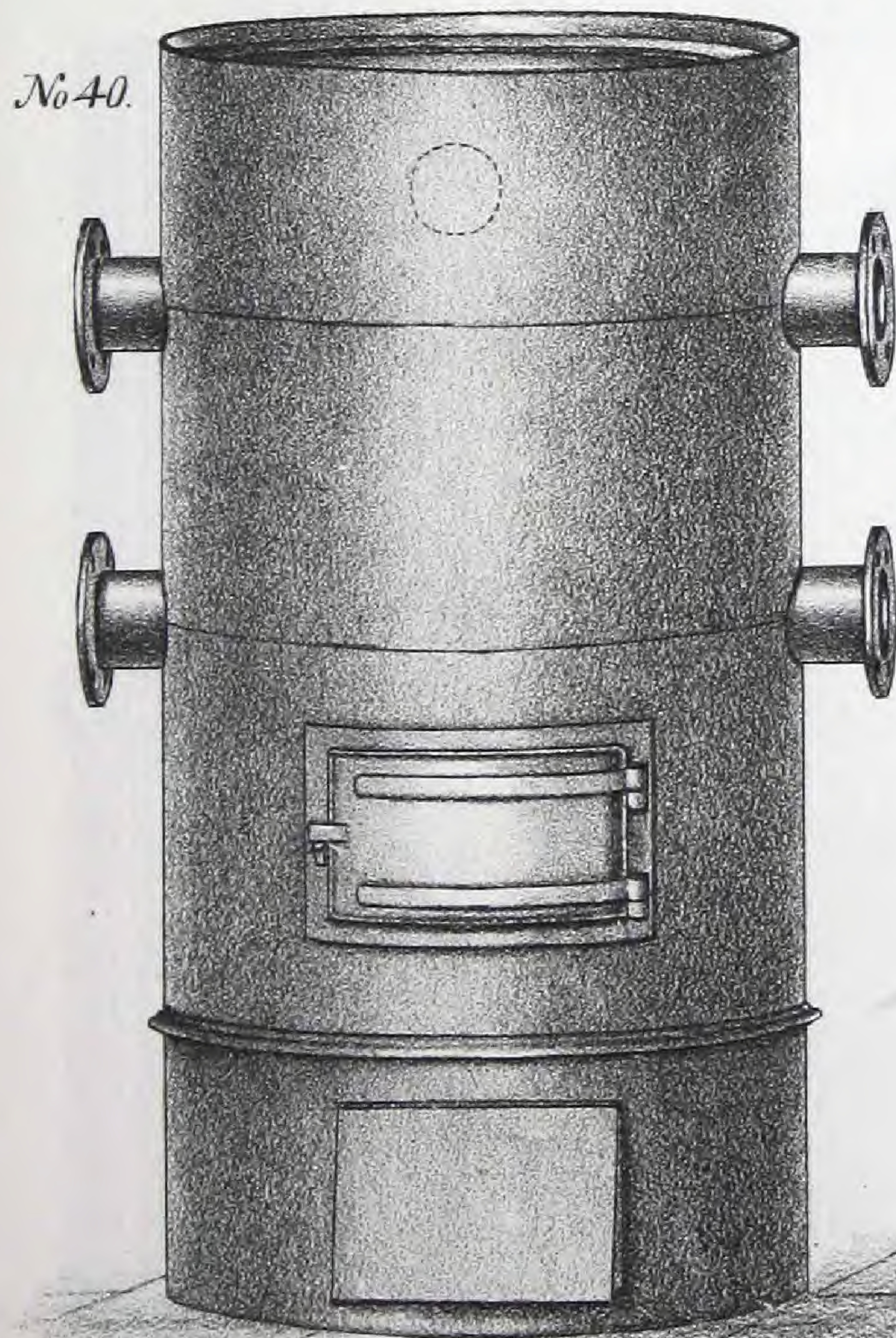


"Burbige & Healy" 16 inch Ribbed Boiler.

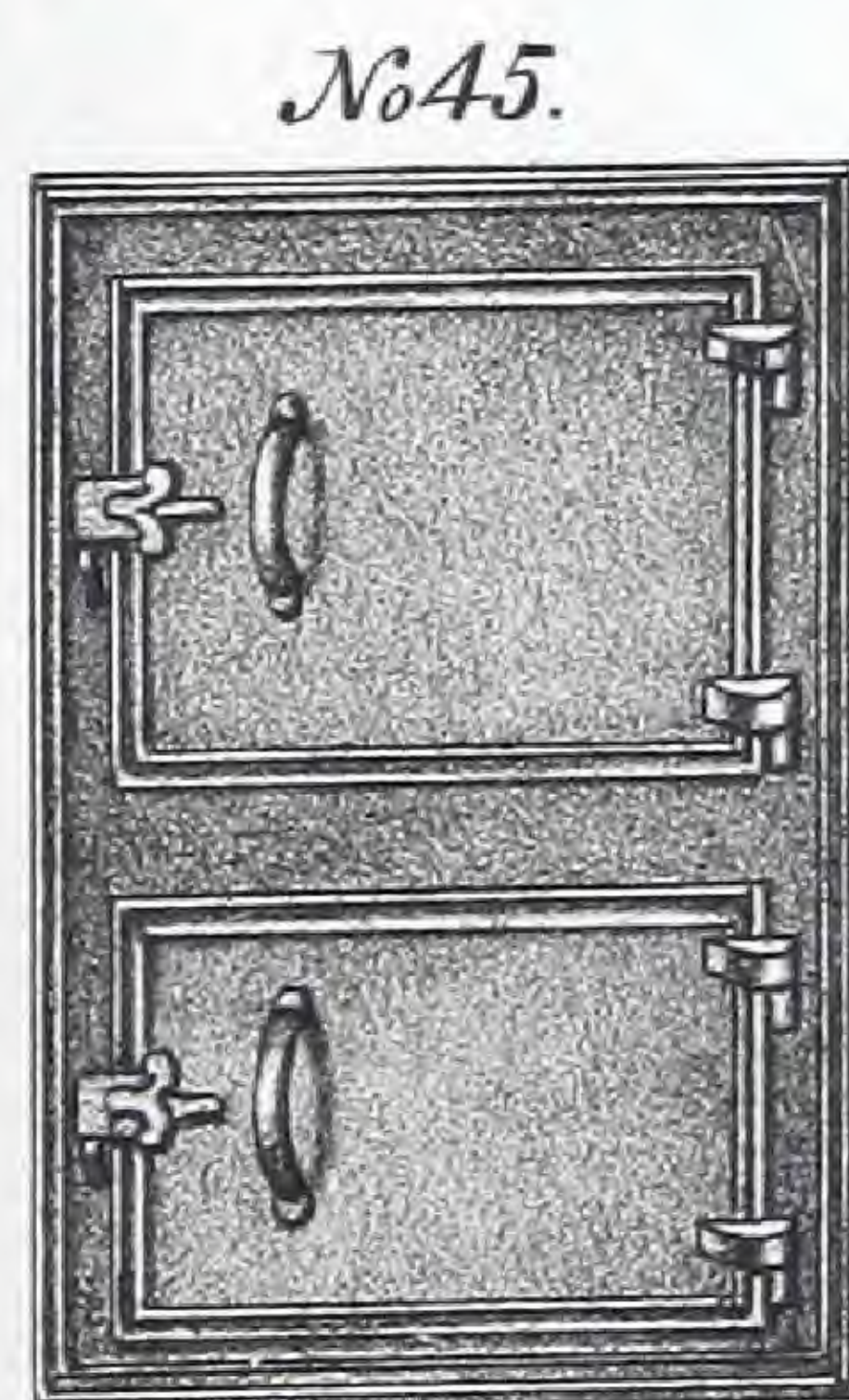


Dust Door.

Check Plate.



Portable Greenhouse Boiler Setting.



Fire Front.

No 47.

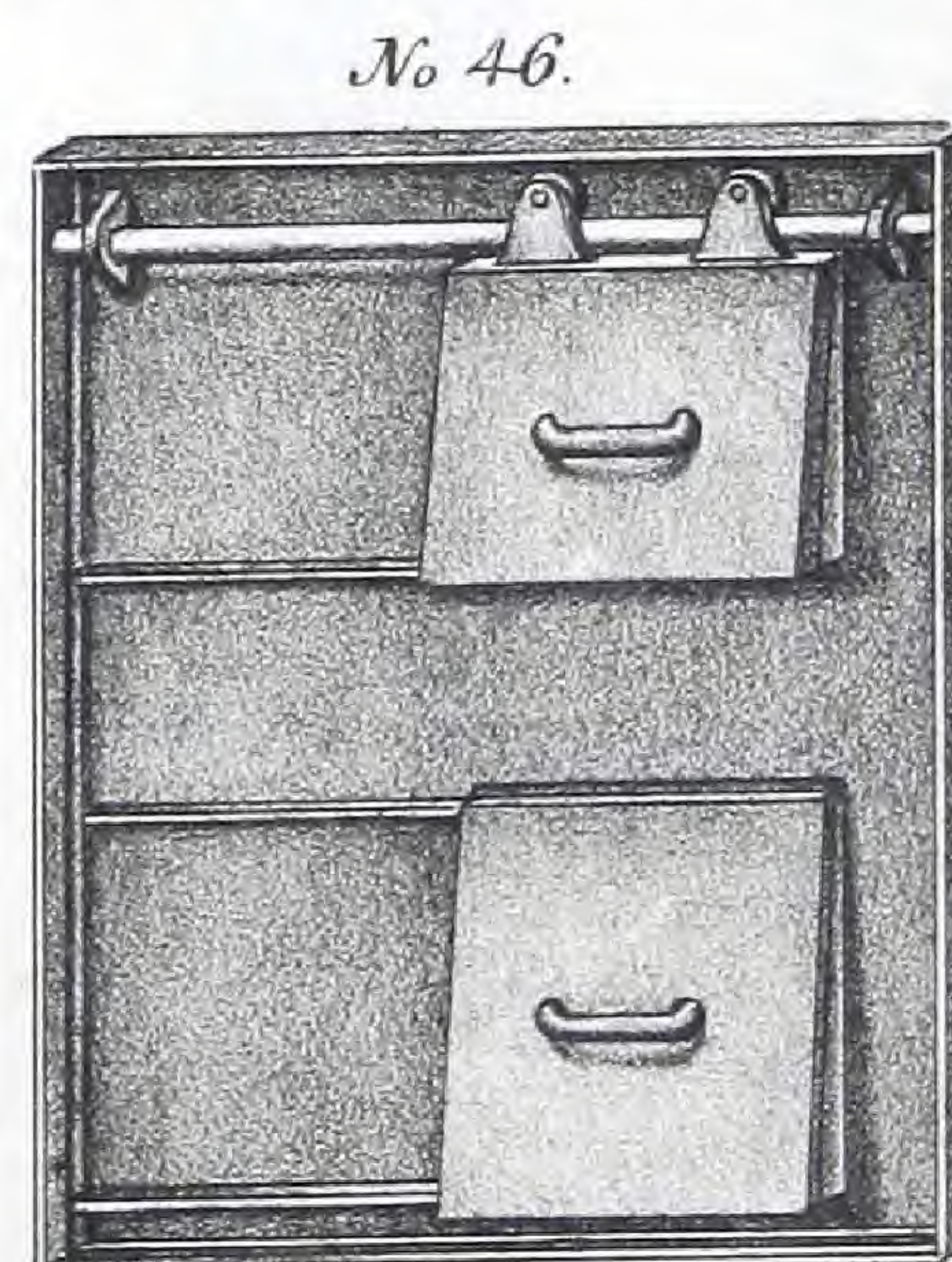


Bearer bars

No 48.

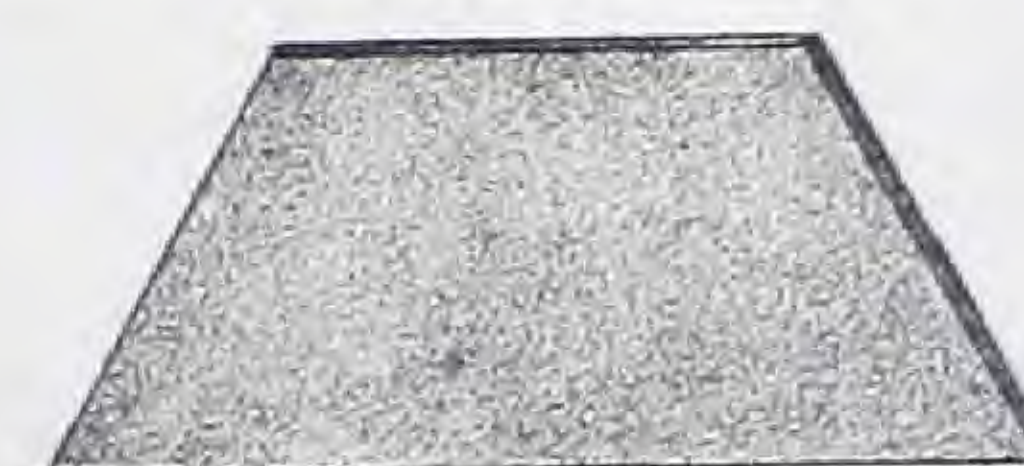


Grate bars.



Fire Front "Sylvester Doors."

No 49.



Dead Plate.



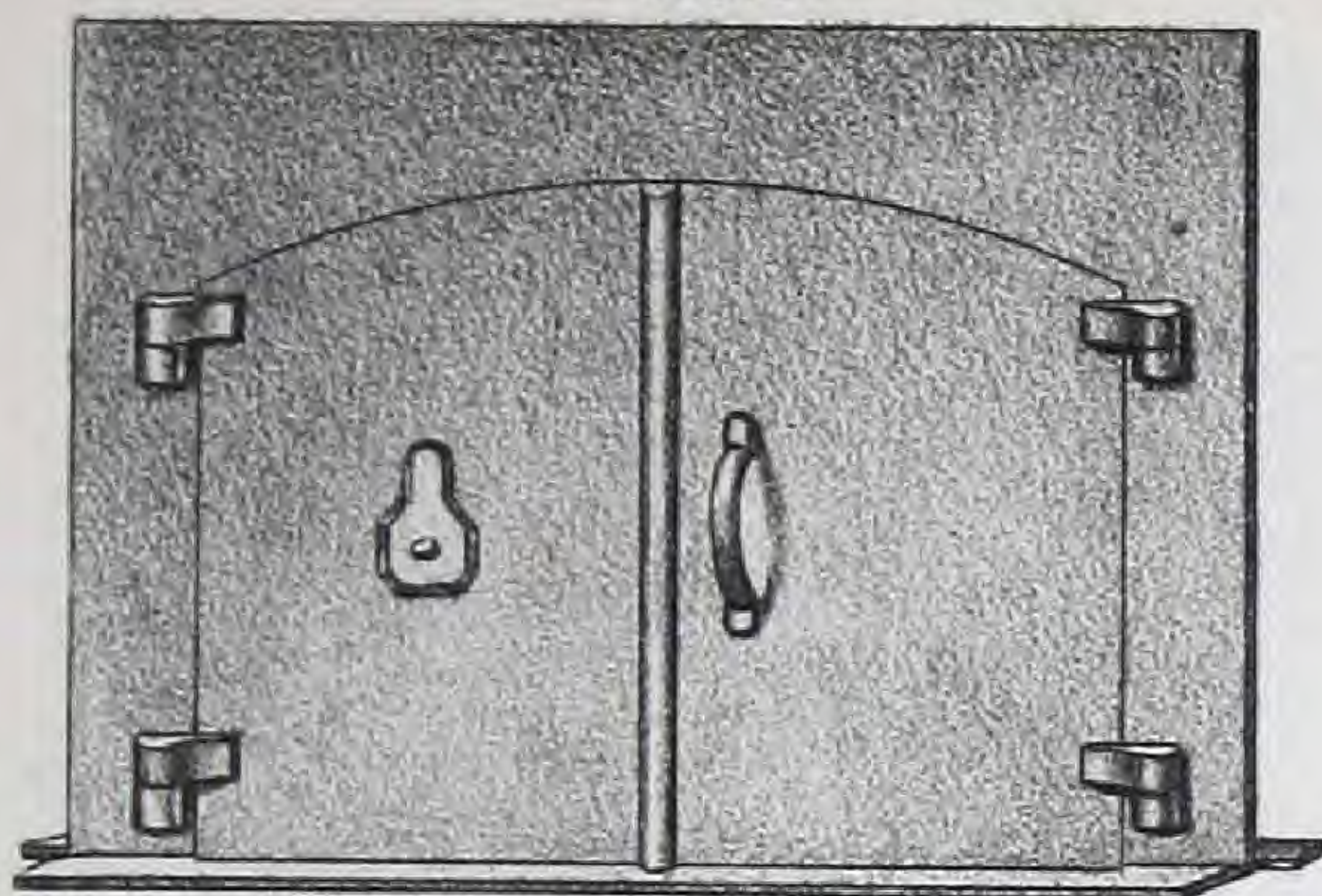
MORRIS, TASKER & CO'S ILLUSTRATED CATALOGUE.

10th EDITION

CLASS SEVENTH.

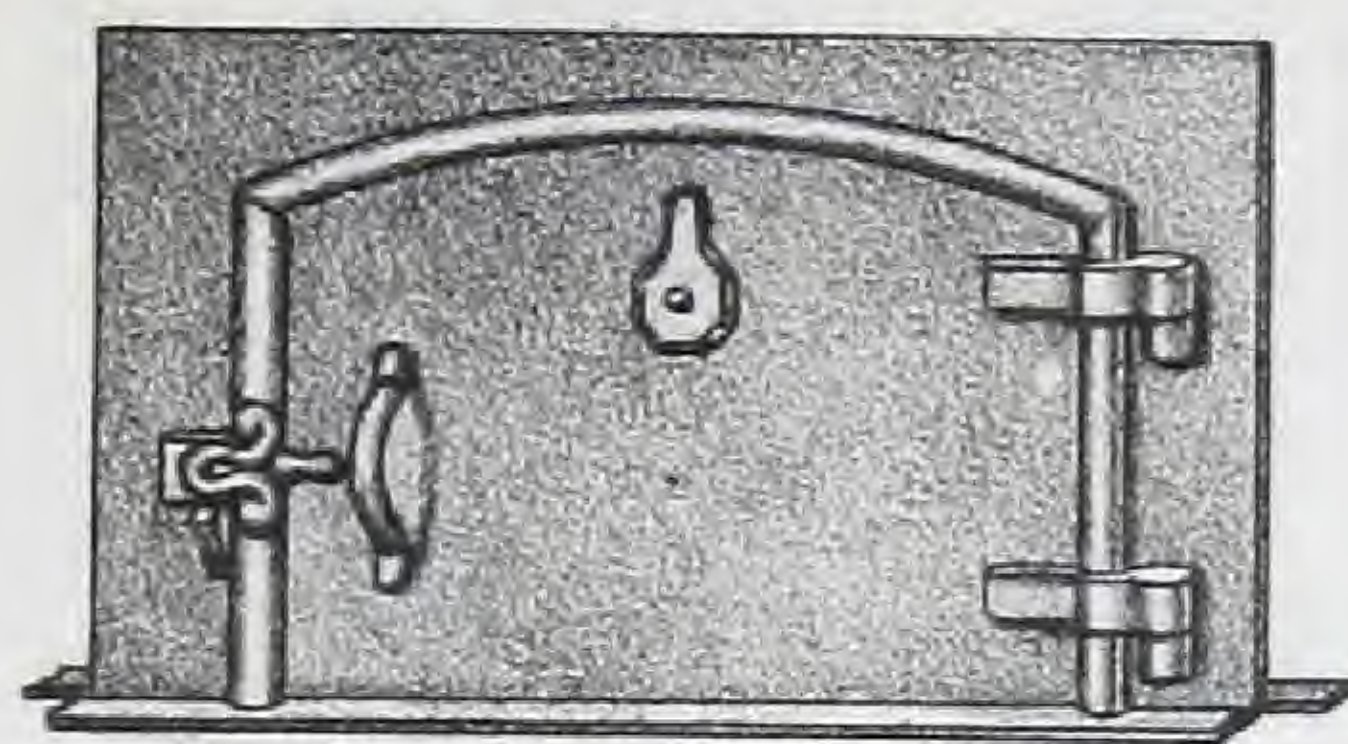
Plate 3.

No 52.



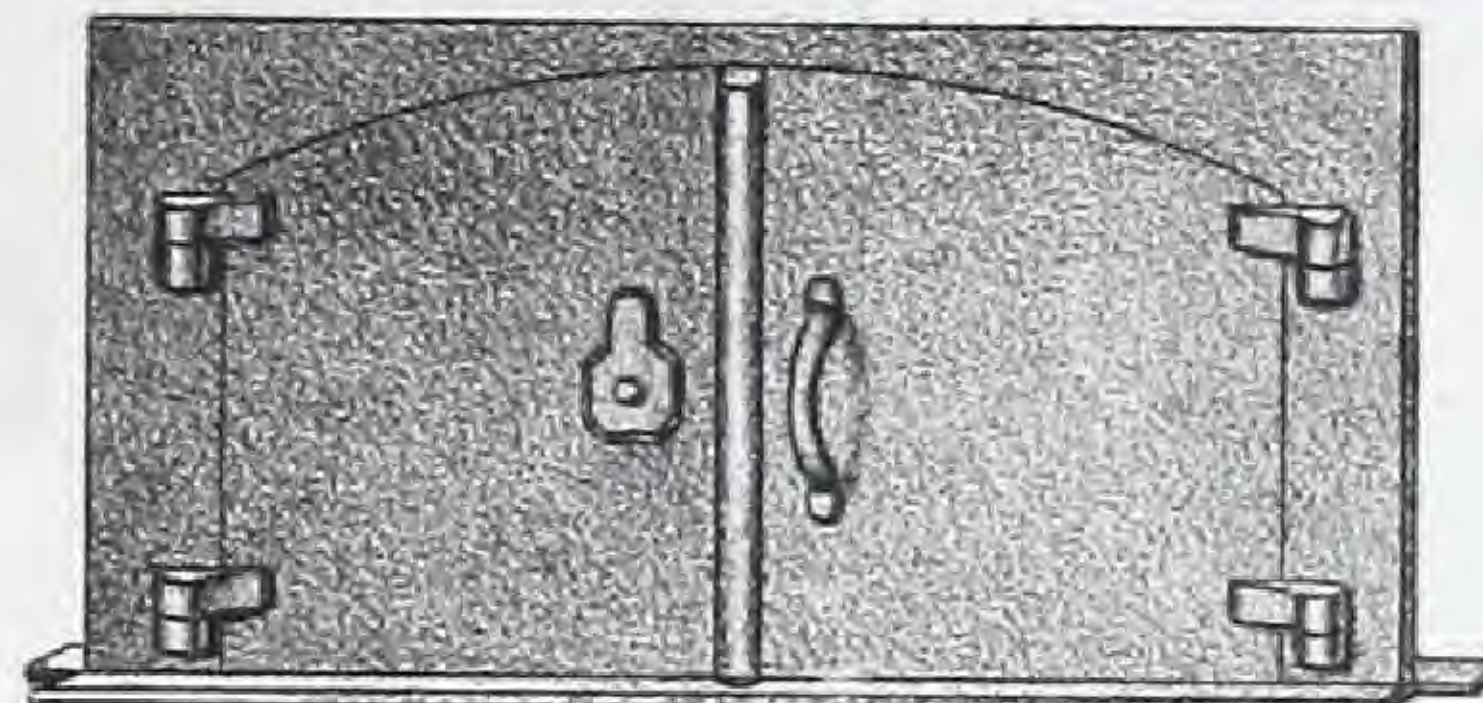
Bake Oven Door with Dead Plate.

No 53.

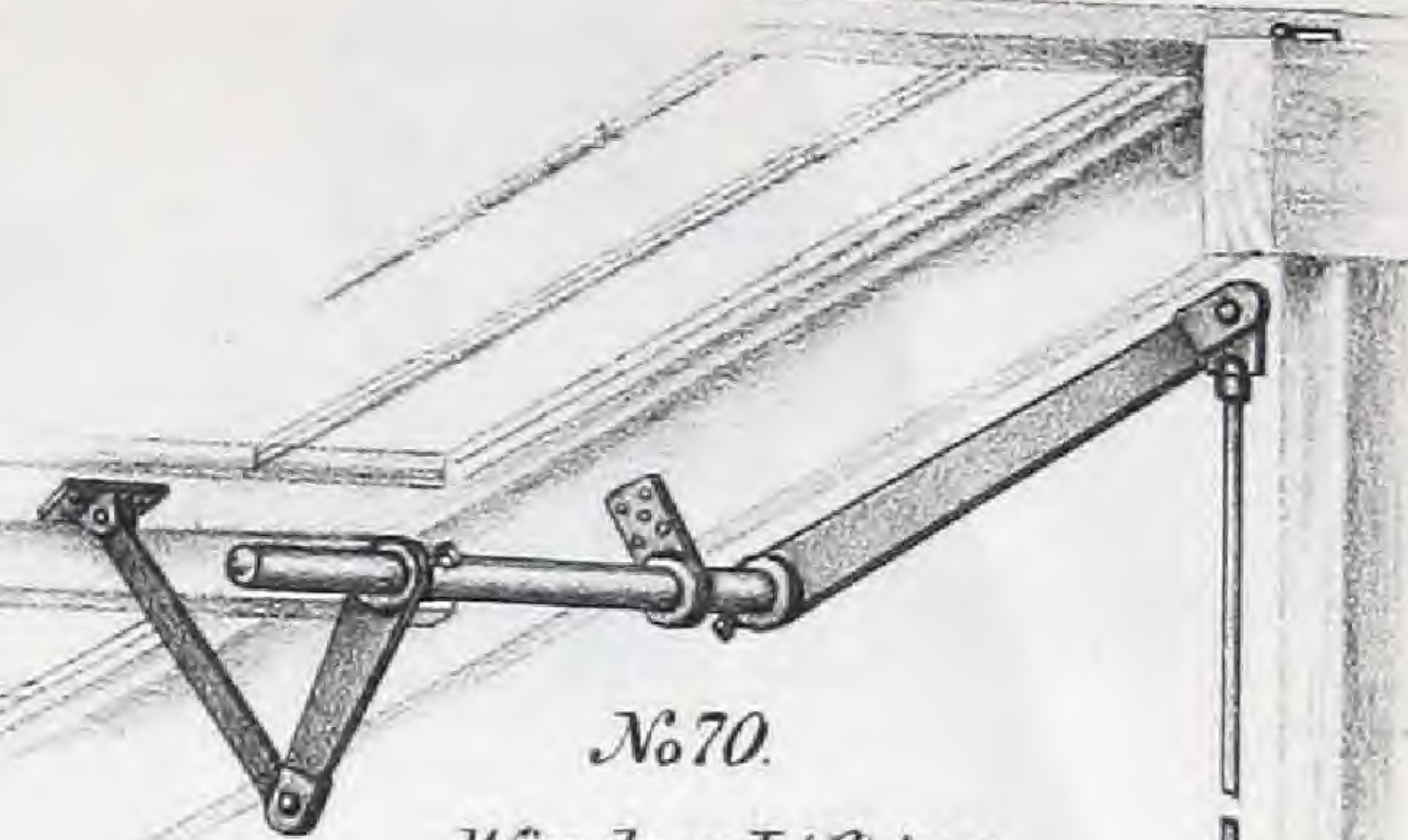


Bake Oven Door with Dead Plate.

No 54.



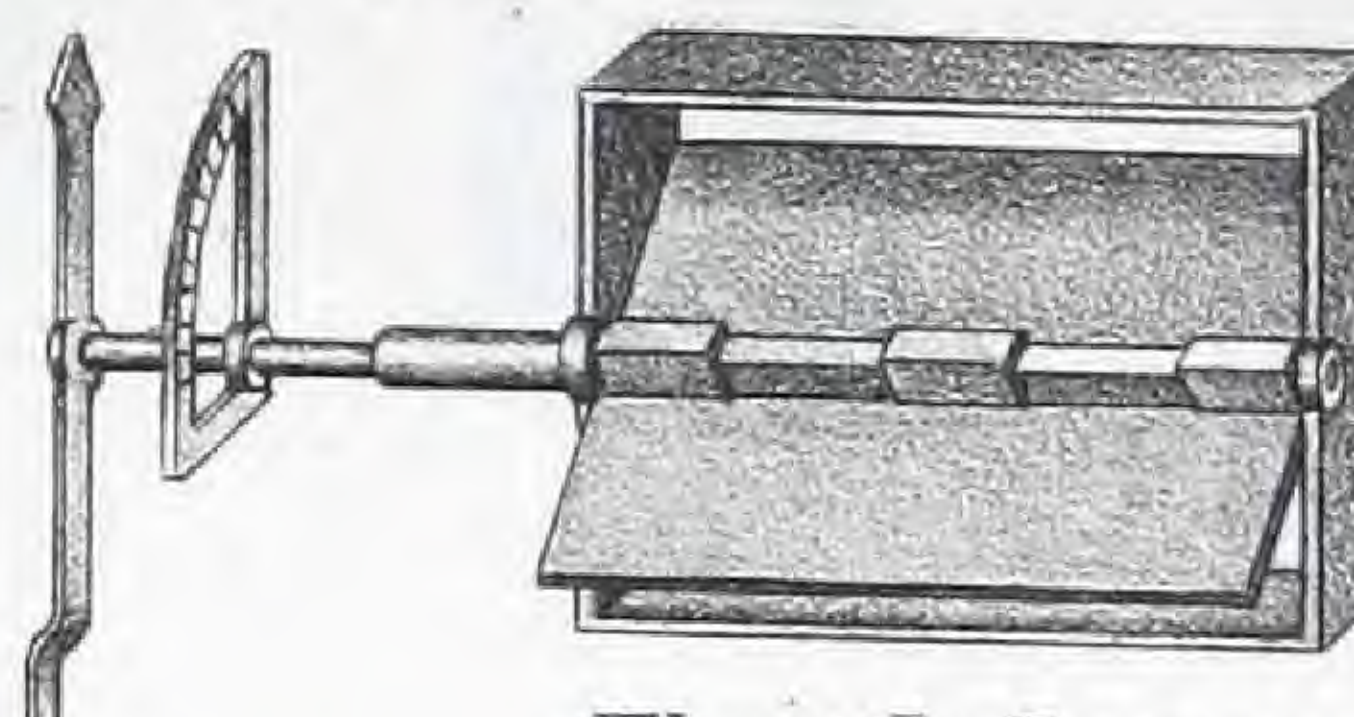
Bake Oven Door with Dead Plate.



No 70.

Window Lifting Apparatus.

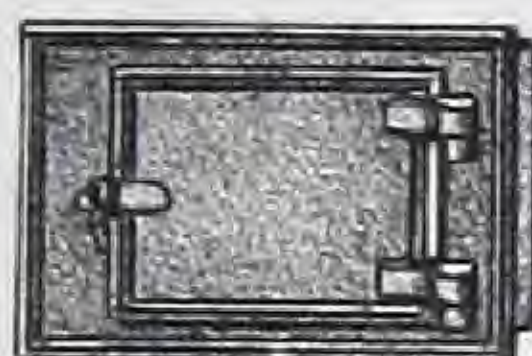
No 69.



Throttle Damper.

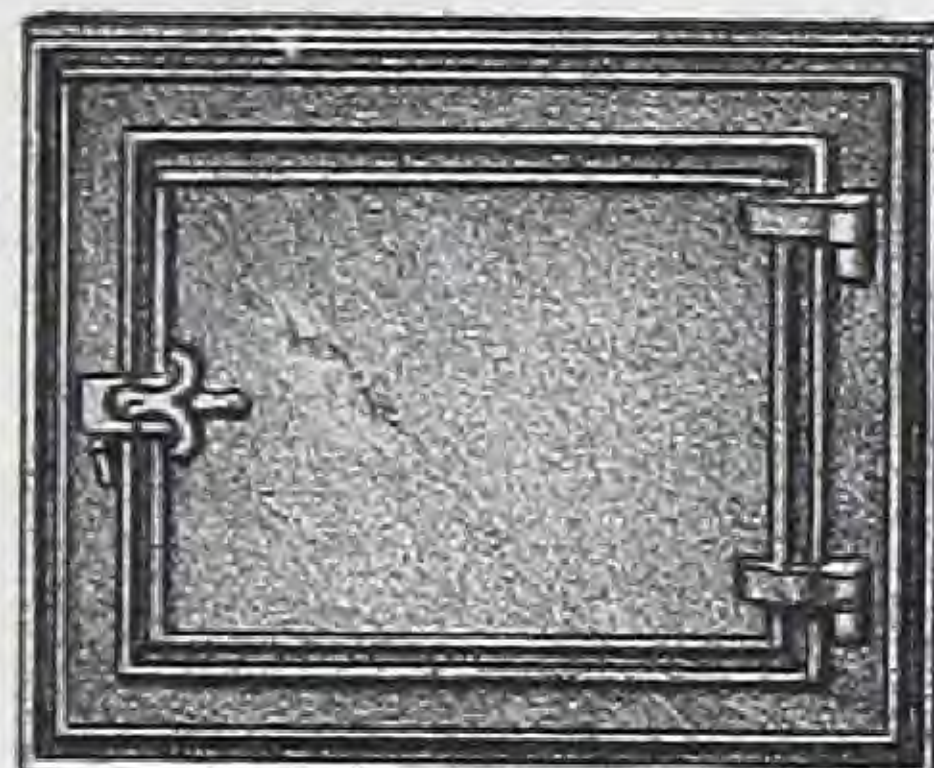
Arrow & Quadrant.

No 55.



Flue or Dust Door with Frame.

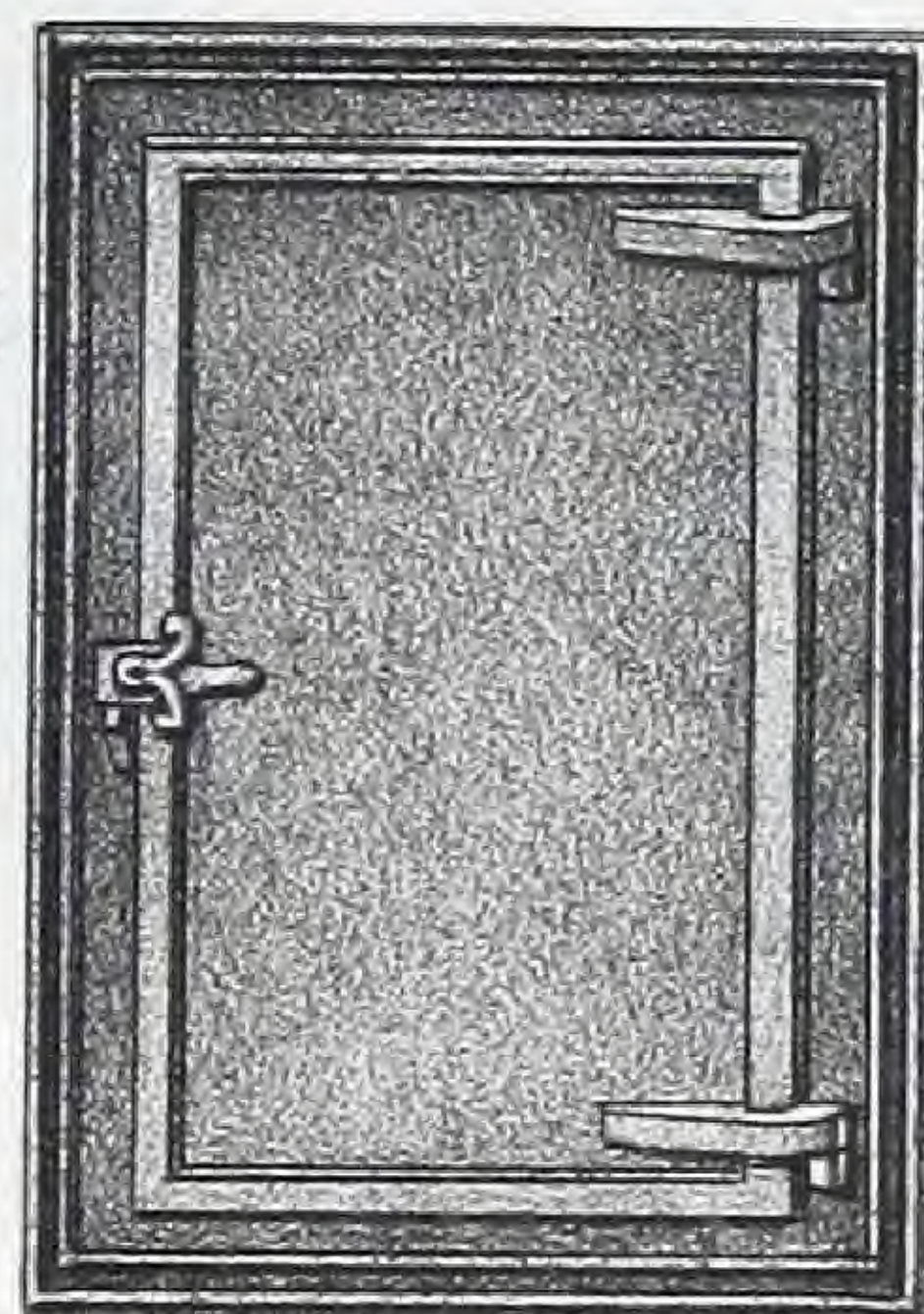
No 56.



Flue or Dust Door.

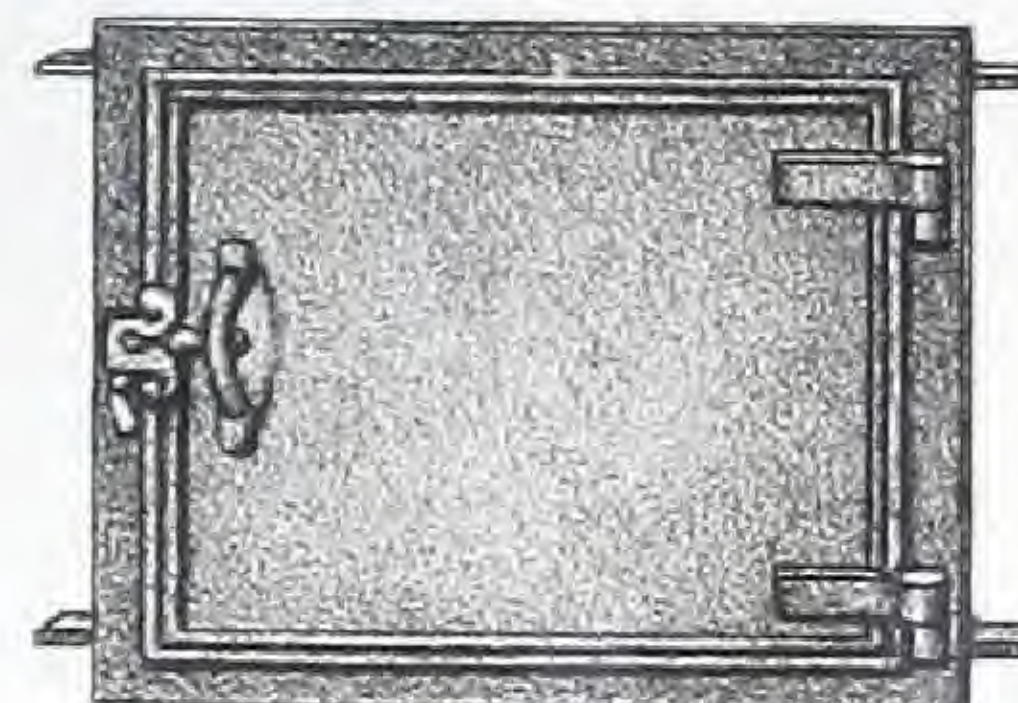
No 60.

No 57.



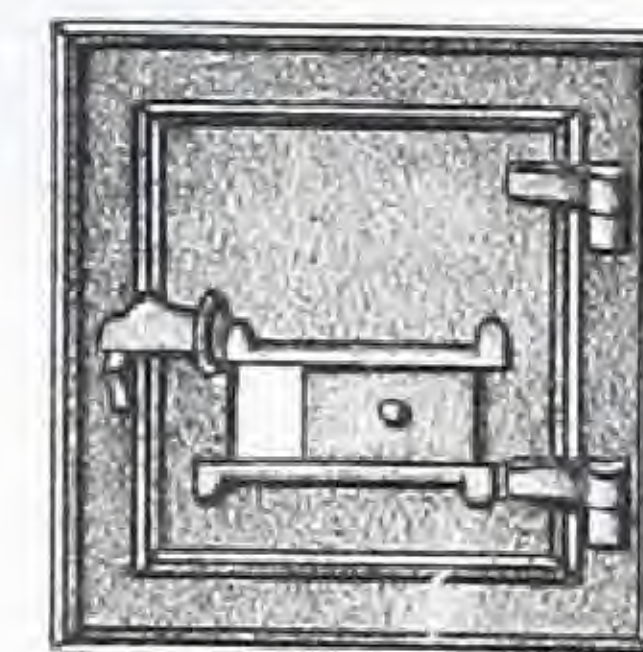
Manhole Door.

No 58.

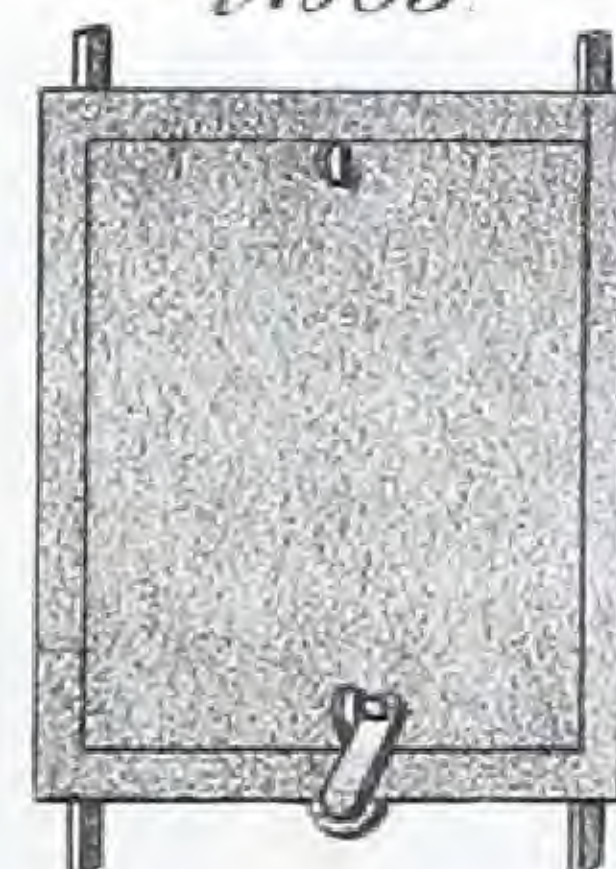


Flue or Dust Door with Frame. Ash Pit Door with Frame.

No 59.



No 63.



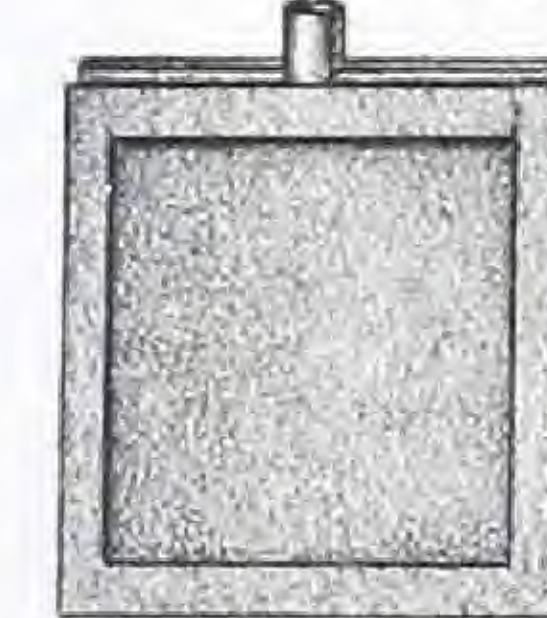
Flue or Dust Door with Frame.

No 64.



Flue or Dust Door with Frame.

No 65.



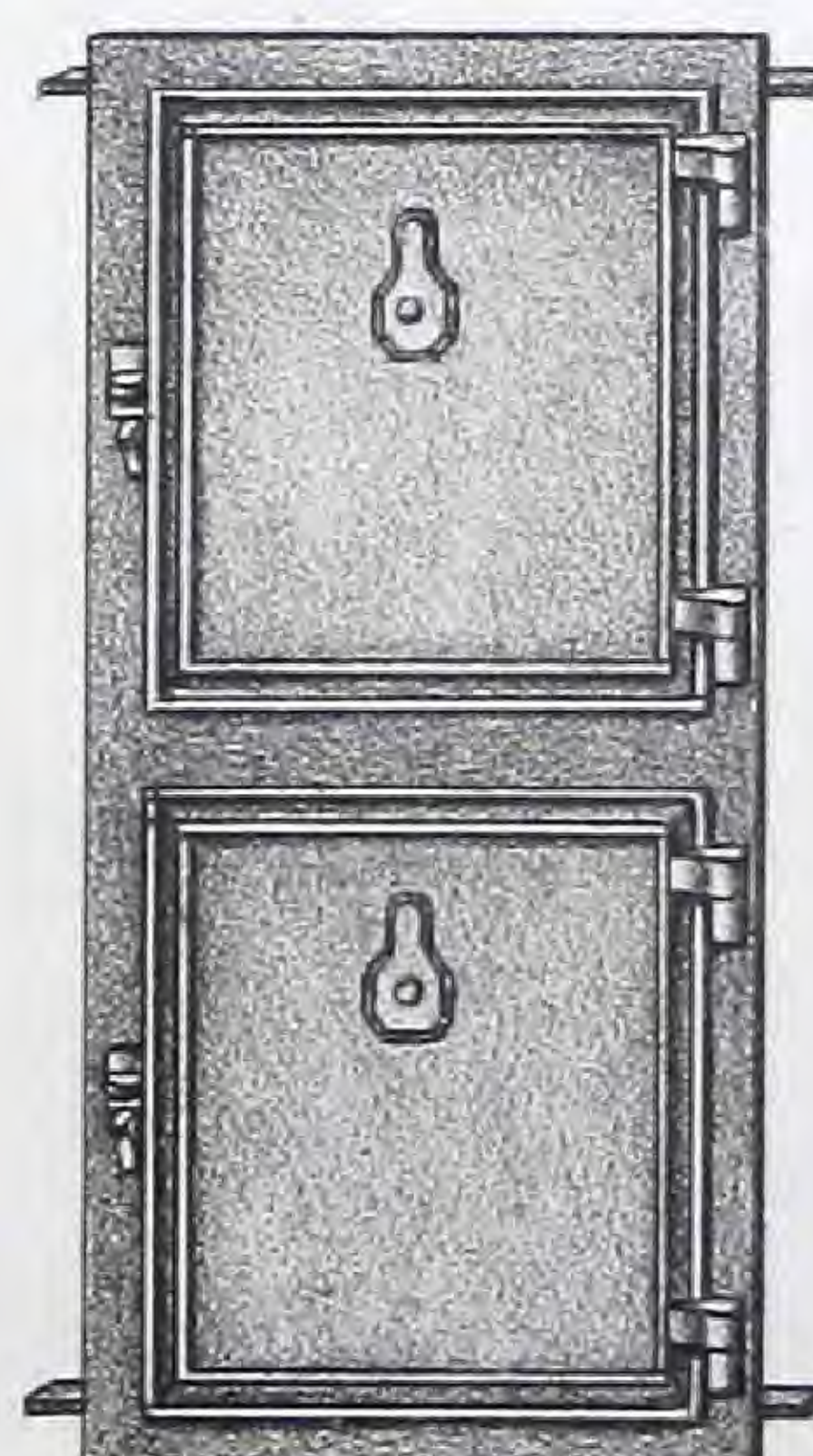
Smoke Flue Damper (sliding).

No 66.



Smoke Flue Damper (sliding).

No 62.



Brick Kiln Fire Front.

No 67.



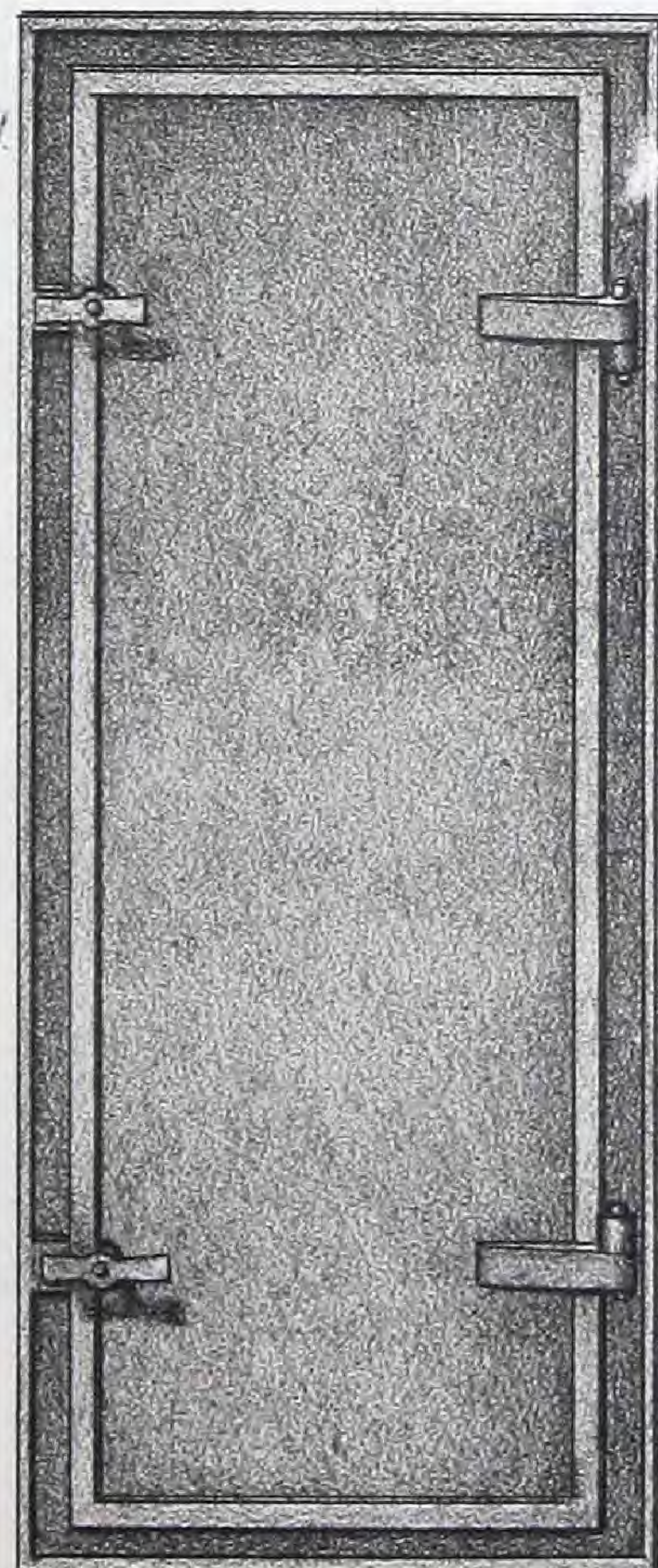
Smoke Flue Damper.

No 68.

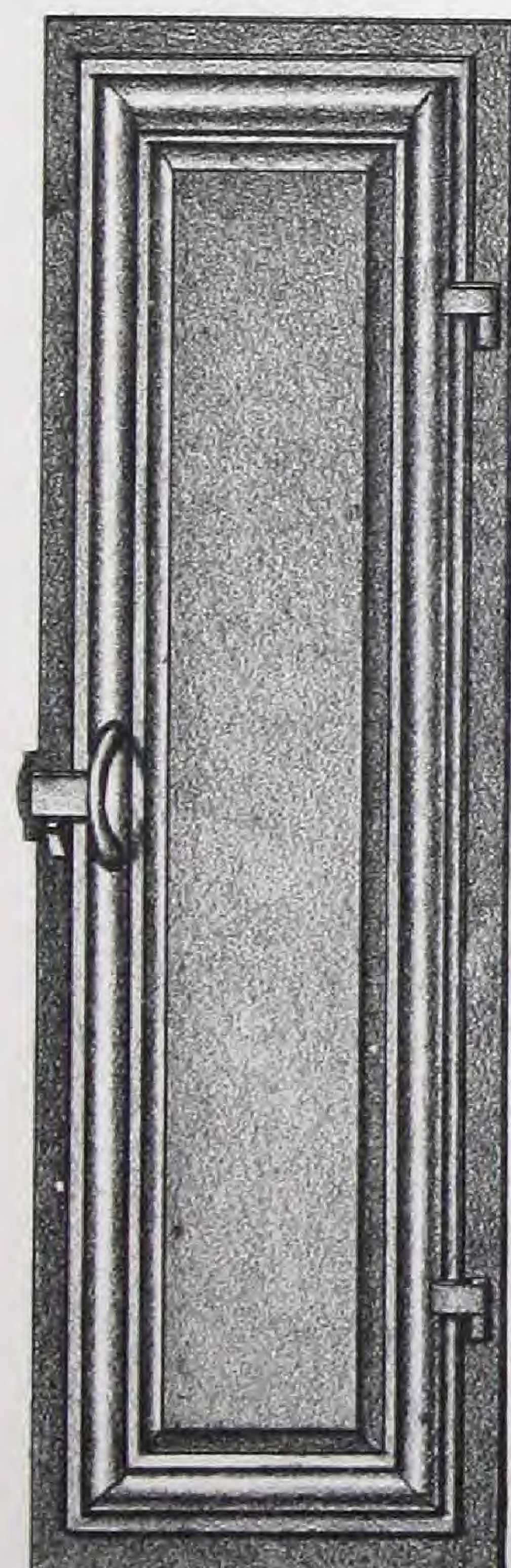


Smoke Flue Damper (sliding).

No 61.



Manhole Door with Frame.



Manhole Door with Frame.



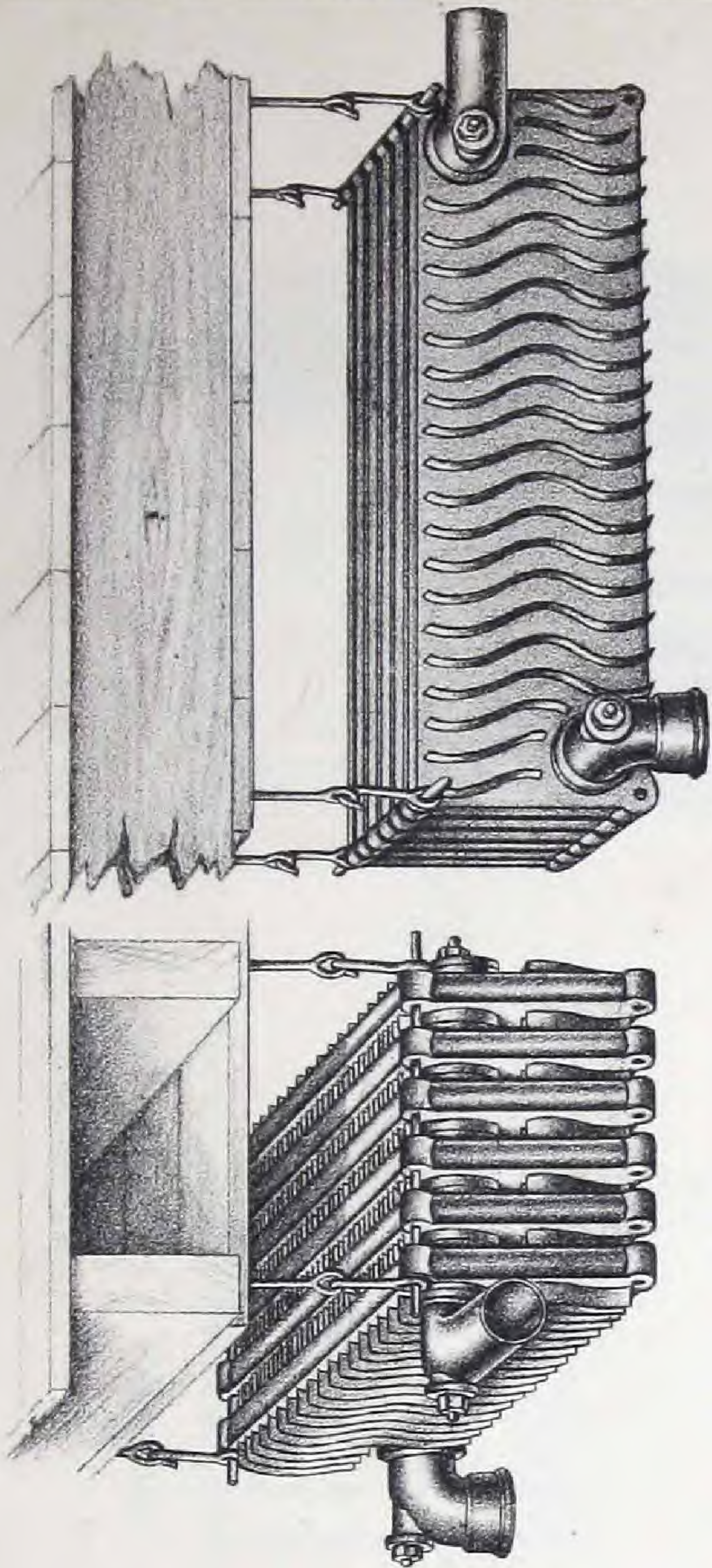
MORRIS, TASKER & CO'S ILLUSTRATED CATALOGUE.

10th EDITION

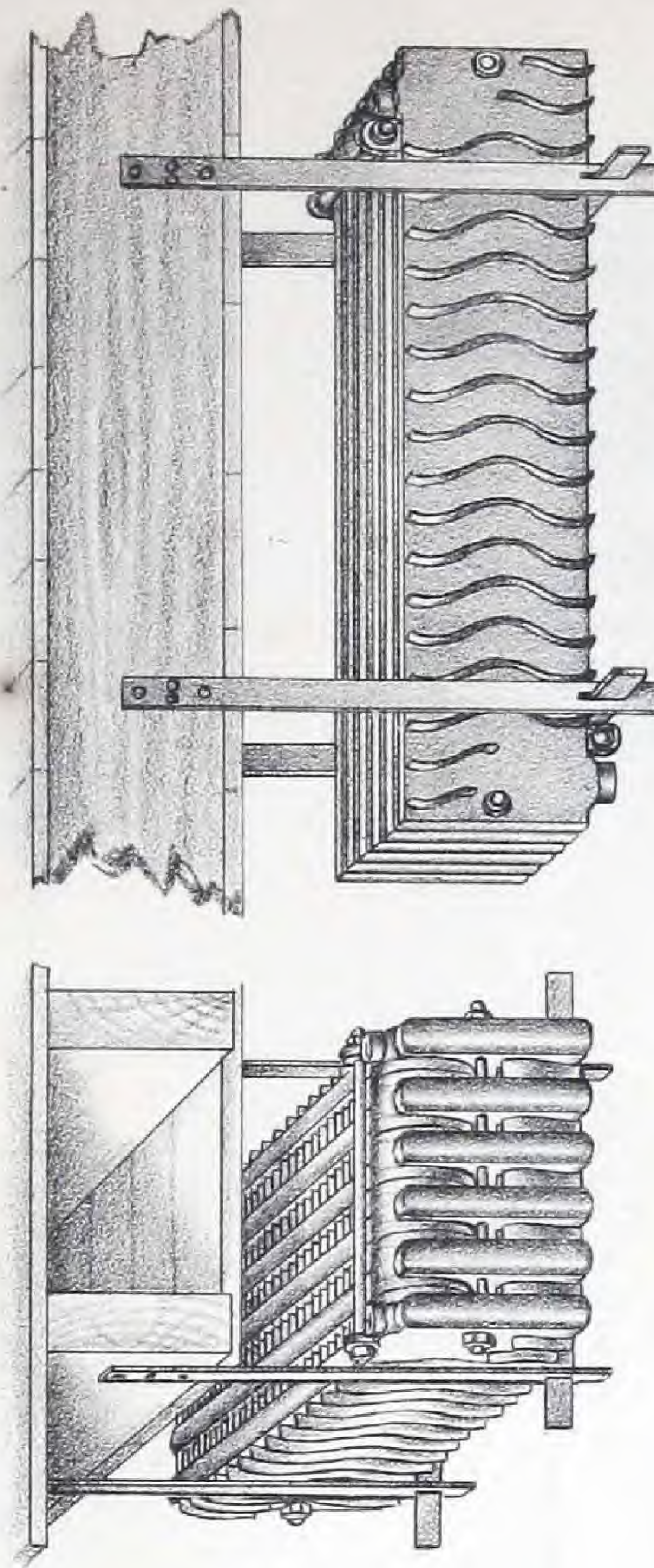
CLASS SEVENTH.

Plate 4.

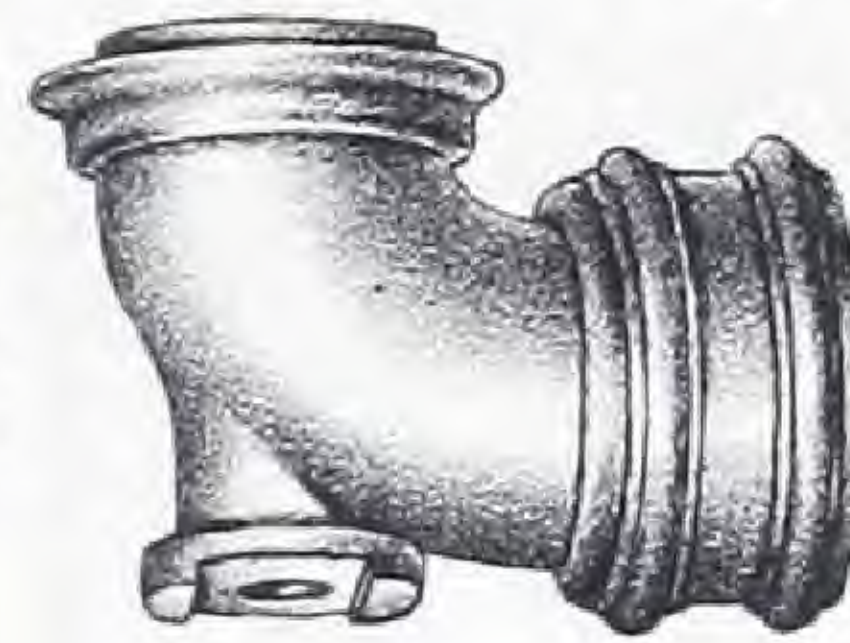
No 75.
Ribbed Radiators for Hot Water.



No 76.
Ribbed Radiators for Steam Heating.



No 77.



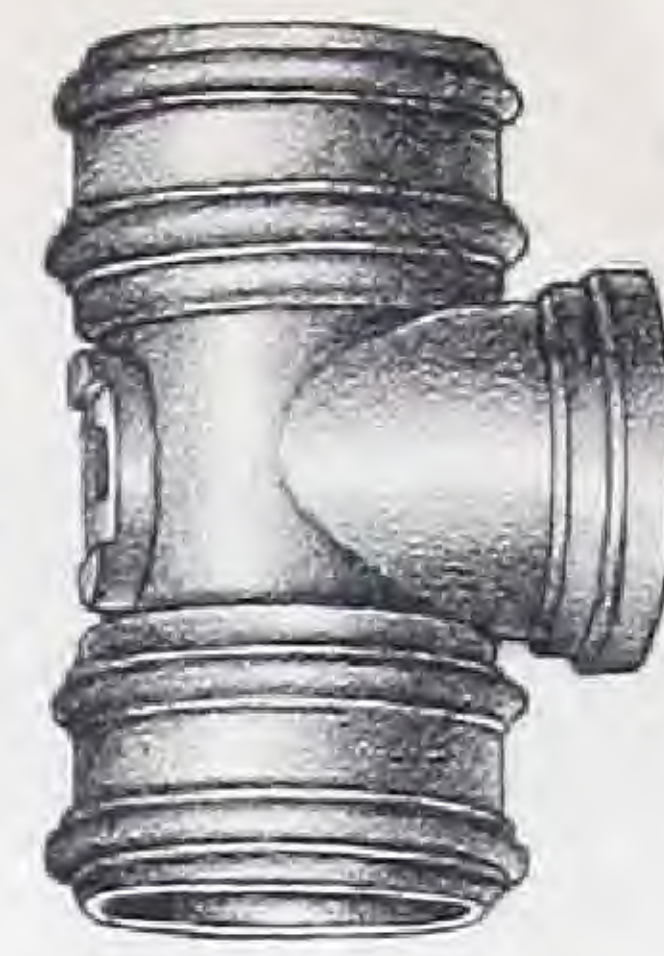
Radiator Ell.

No 78.



Radiator Socket.

No 79.



Radiator Tee.

No 80.



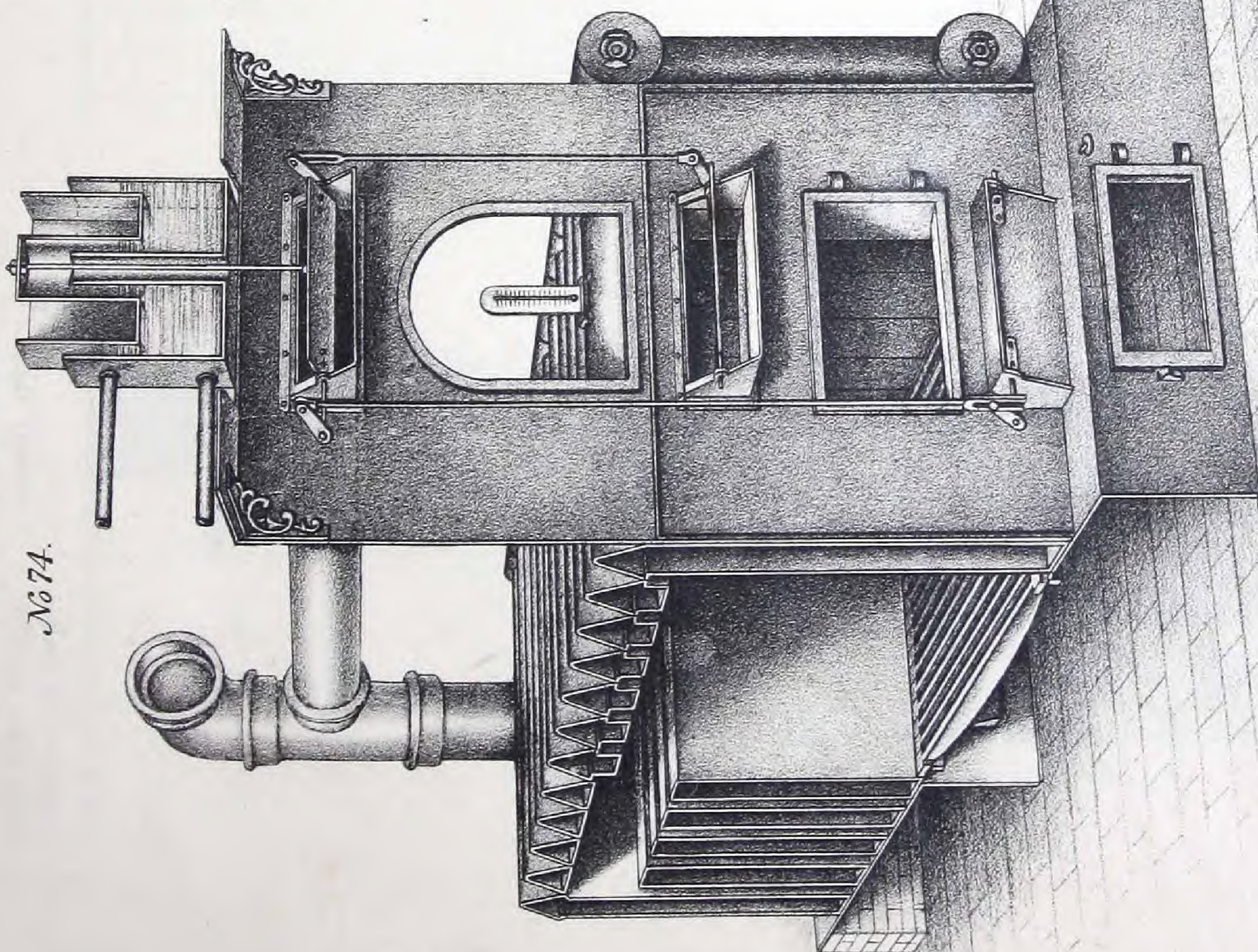
Cap.

No 81.



Separating Piece. Ring Packing.

No 82.



No 74.

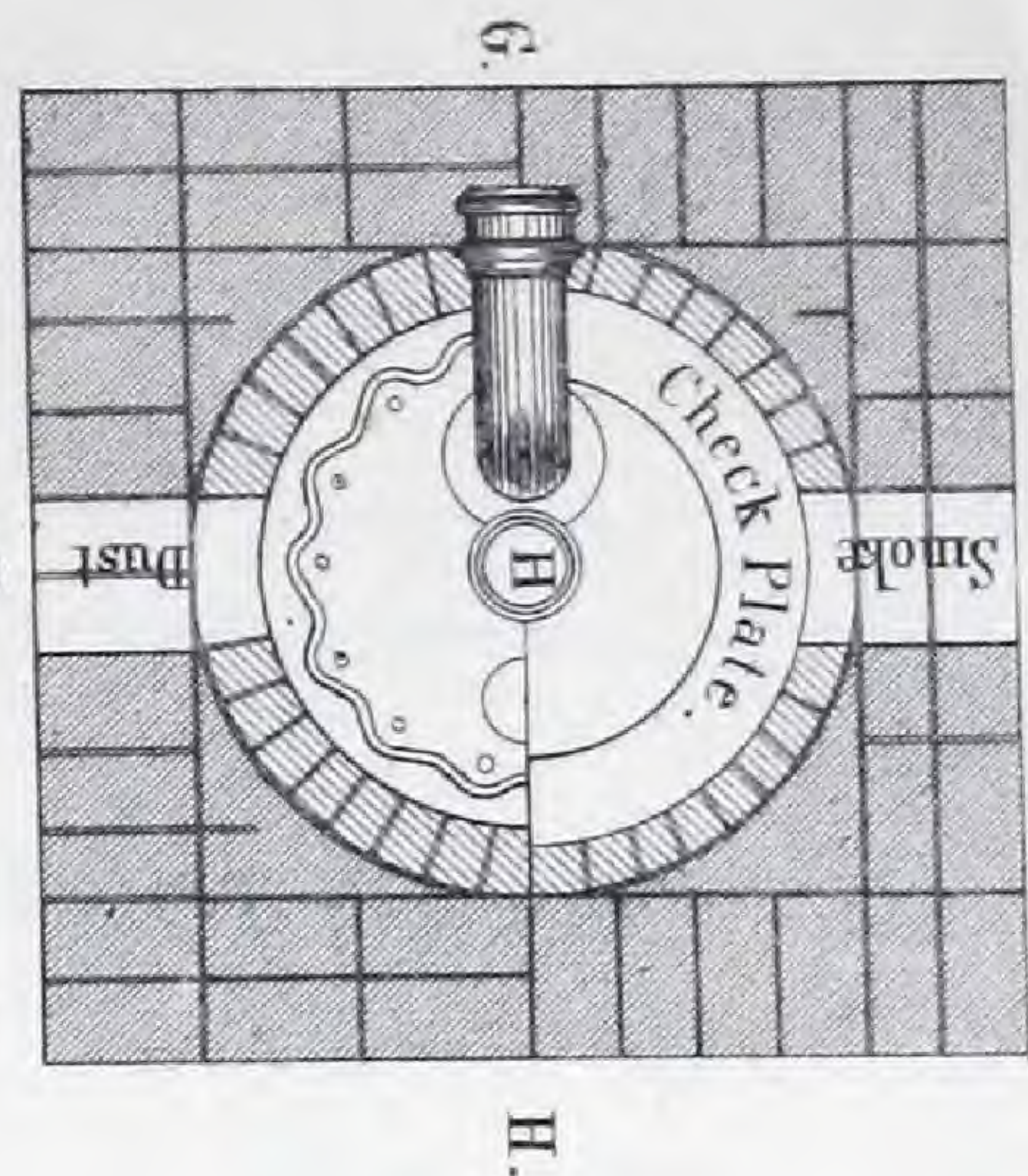
"Tasker" Self Regulating Hot Water Furnace.
(Section showing Construction.)

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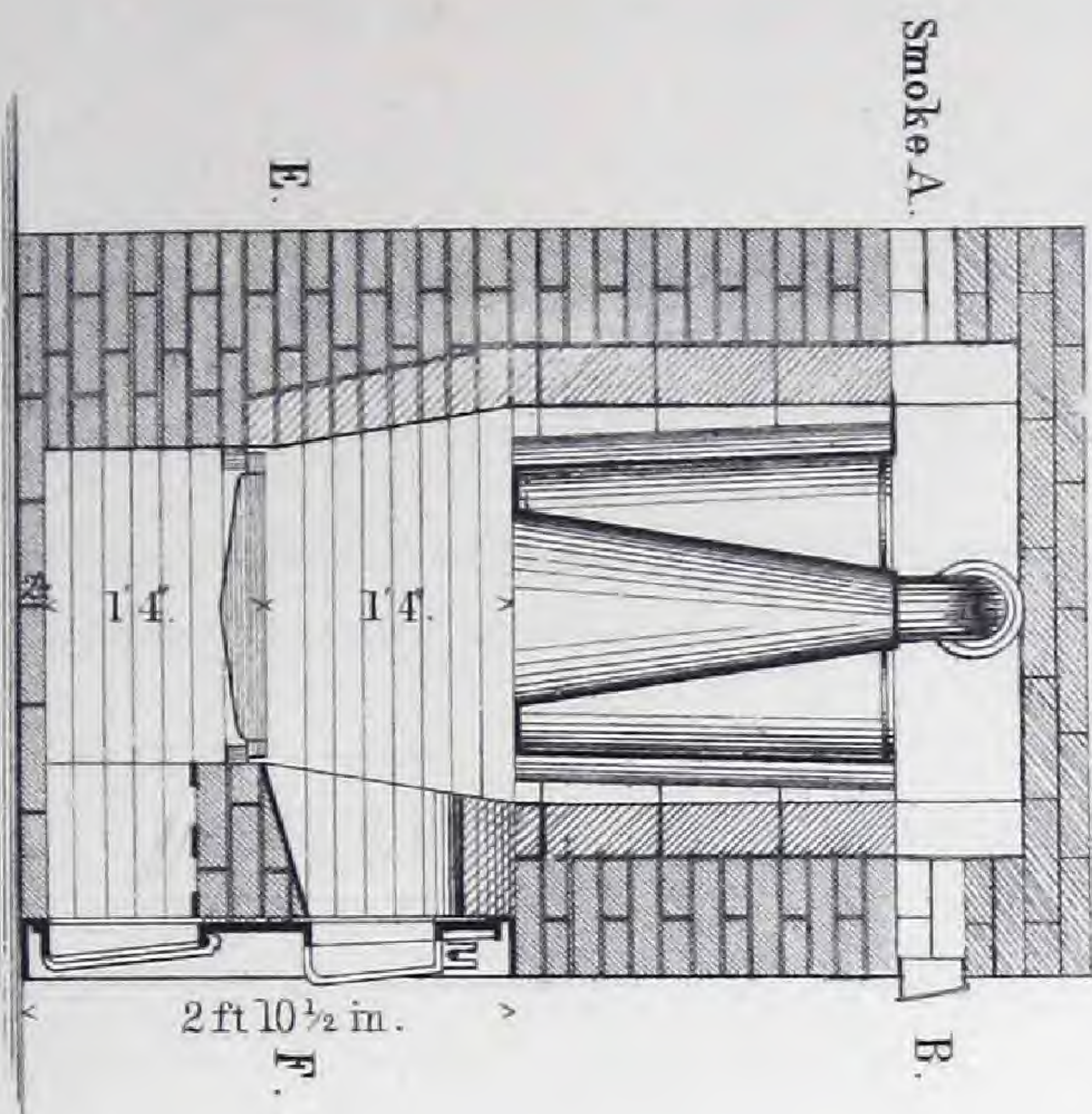


CCA

SETTINGS OF BURRIGE & HEALEY'S GREEN-HOUSE BOILERS.



Horizontal Section at A B.



Vertical Section on C D.

The Sylvester Front is the same for all sizes of Boilers.

The grate of 28 in. Boiler is 2 ft. 0 in. long by 2 ft. 0 in. wide.

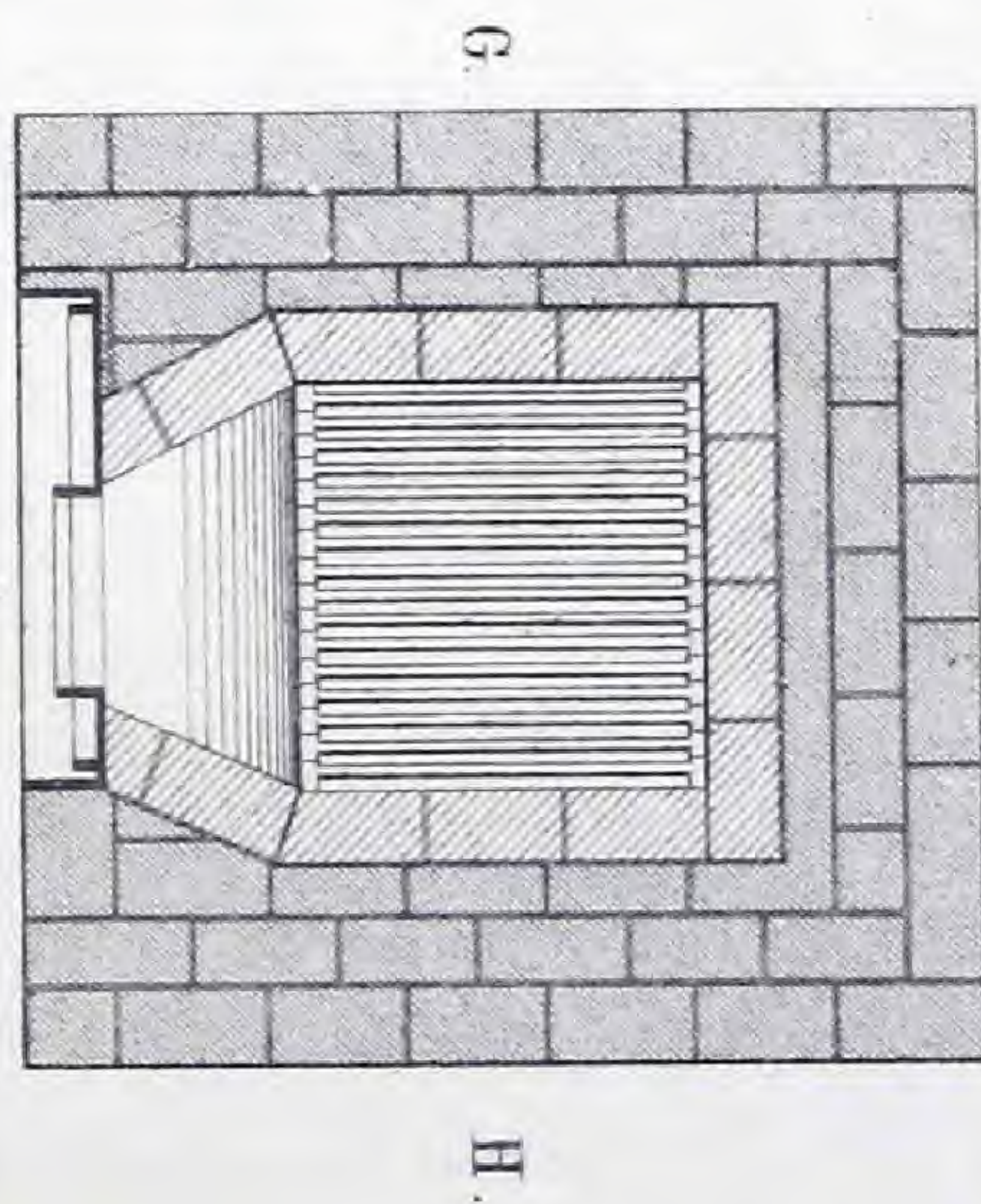
"	"	20	"	"	2	"	0	"	"	1	"	6	"	"
"	"	16	"	"	1	"	6	"	"	1	"	2	"	"

The ash pit of all the Boilers are the same size as the grates. The height of the bottom of each Boiler is given on the vertical section.

The outside sizes of the brick work in the plan:

For 28 in. Boiler,	4 ft. 10 in. square.							
"	20	"	"	4	"	6	"	"
"	16	"	"	4	"	2	"	"

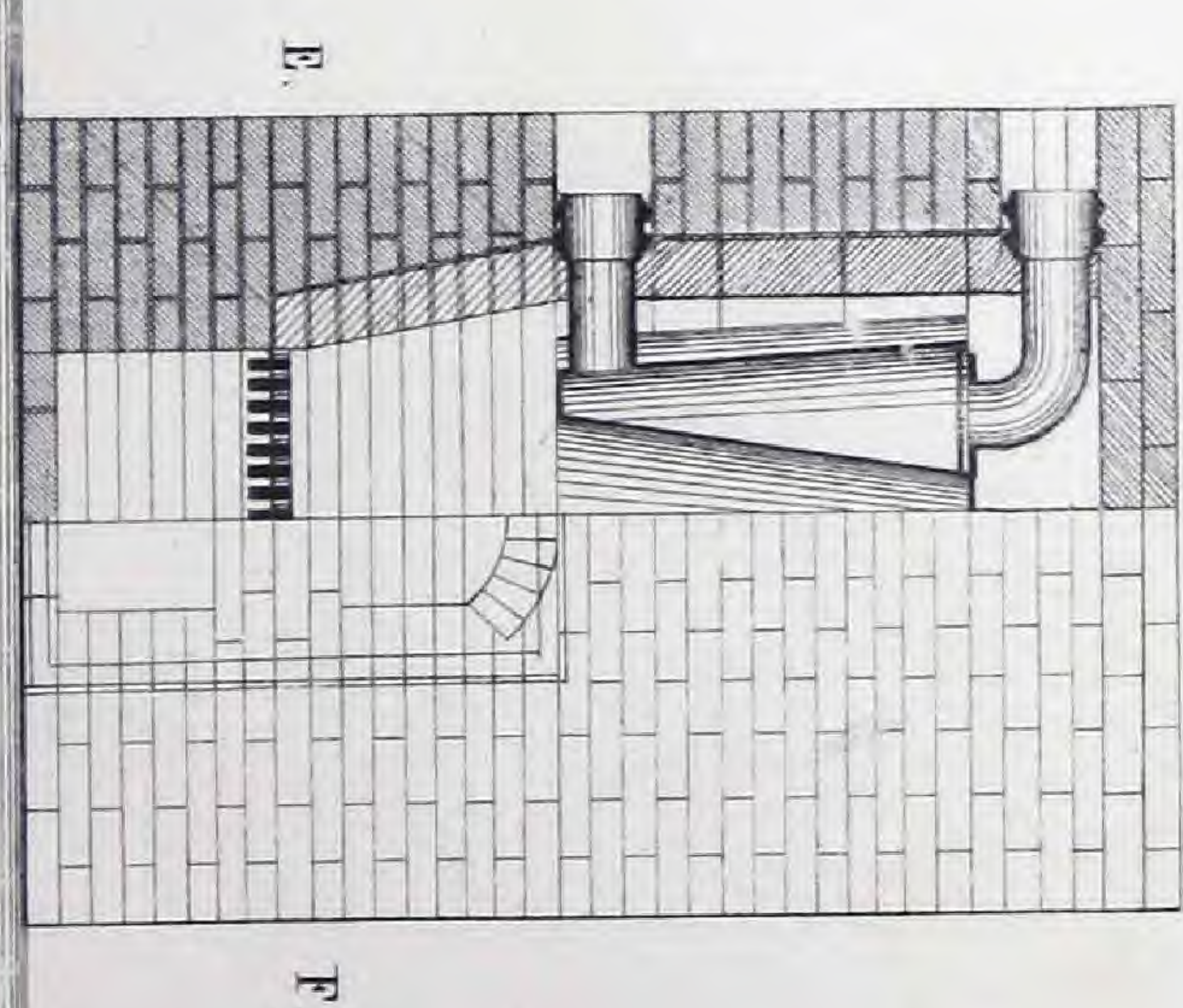
The fire chamber is drawn in from the size and shape of the grate, to a circle one inch larger all round, than the projections of the Boiler.



Horizontal Section at E F.
Surface of Grate.



Front View.



Half Front View,
showing Brick work
back of Sylvester Front.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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Persons in ordering will please state the "Edition" they order from.

CLASS EIGHTH.

Every order for special articles must have accurate plans and dimensions attached; and no order, "same as before," will be received.
Any article for which no price is quoted on the list will be made only to special order, although such article may be shown in the illustrations.

APPARATUS FOR SOUNDING FOR MINERALS, ETC.

No. PLATE.

1	1	Drill or Sounding Rods, 1 $\frac{1}{4}$ " Square Iron Body, 1 $\frac{1}{4}$ " Tube Screw; length,	10'	5'	2' 6"	1' 3"
		Price, each length,	\$8.50	\$5.50	\$4.00	\$2.25

SIZE,		2	2 $\frac{1}{2}$	3	3 $\frac{1}{2}$	4
		\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
2	1	Cross Head for Drilling or Sounding, \$11.00	...	...	...	...
3	1	Shackle Joint for Drilling with Rods, 15.50	...	...	...	...
4	1	Worm Augur, Taper,	5.70	6.75	7.80	8.85
5	1	Spiral Augur, (4 twists),	7.20	8.50	9.90	11.25
6	1	Pod Augur,	6.30	7.50	8.70	9.90
7	1	Tool for Enlarging Hole below Well Pipe,	8.60	10.00	12.00	13.50
8	1	Thief Bucket,	7.20	8.35	9.90	11.25
9	1	Drill, pointed end,	6.30	7.50	8.70	9.90
10	1	Drill, chisel end,	6.30	7.50	8.70	9.90
11	1	H Drill, or Reamer,	9.30	10.75	12.20	13.65
12	1	Broach,	9.10	10.80	12.30	14.80
13	1	Swivel,	2.80	3.00	3.25	3.75
14	1	Y or Fork,	2.70	2.70	2.70	2.70
15	1	Drawing Hook,	2.70	2.70	2.70	2.70
16	1	Iron Blocks, per pair, \$19.00	...	...	...	...
17	1	Clamp,	3.20	4.00	...	...
18	1	Wrench,	1.50	1.50	1.50	1.50
19	1	Strap Joints,	1.60	2.00	2.50	3.00

WROUGHT IRON TUBULAR FLUSH JOINT PUMP RODS.

Internal Diameter, Nominal.	External Diameter, Actual.	Price, per Foot, including Joint.
Inches.	Inches.	\$ c.
$\frac{1}{2}$	...	...
$\frac{3}{4}$	1.05	.28
1	1.32	.35
1 $\frac{1}{4}$	1.66	.45
1 $\frac{1}{2}$	1.9	.56

Additional charge for Pump Rods of extra heavy tube.

21 1 PIPE TONGS. NUMBER IN CLASS THIRD, TENTH EDITION, 48.

Size,	$\frac{1}{2}$	$\frac{3}{4}$	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$
Price, per pair,	\$1.30	\$1.55	\$2.00	\$2.20	\$2.55

35021

ARTESIAN WELL BORING TOOLS.

Size,			2	2½	3	3½	4	5	6	8	10	12
			\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
23	2	Pod Augur, with Steel Cutting Edge,	6.20	7.50	8.70	9.90	11.10	13.50	15.90	20.70	25.50	29.10
24	2	Lip Augur, " "	6.20	7.50	8.70	9.90	11.10	13.50	15.90	20.70	25.50	29.10
25	2	Worm Augur, (8 twists),	8.70	10.50	12.30	14.10	15.70	19.50	23.10	30.30	37.50	44.70
26	2	" (4 twists),	7.20	8.50	9.90	11.25	12.60	15.30	18.00	23.40	28.80	34.20
27	2	" (2 twists),	6.00	7.20	8.40	9.60	10.80	13.20	15.60	20.50	25.20	28.00
28	2	" Conical,	5.70	6.75	7.80	8.85	9.90	12.00	14.10	18.30	22.50	26.70
29	2	" Tapering,	5.70	6.75	7.80	8.85	9.90	12.00	14.10	18.30	22.50	26.70
30	2	Spiral Augur, flat, }	5.70	6.75	7.80	8.85	9.90	12.60	15.30	20.70	26.10	32.10
31	2	" " }	5.70	6.75	7.80	8.85	9.90	12.60	15.30	20.70	26.10	32.10
32	2	Wrench Bar,	...	2.70	...	...	...	...	3.60	...	...	...
33	2	Y or Fork,	...	2.70	...	...	...	...	3.90	...	...	...
34	2	Lifter,	...	4.75	...	...	...	...	6.00	...	...	...
35	2	Well Hook,	...	5.40	...	...	...	...	7.20	...	...	...
36	2	Spring Catch for Hauling Pipe,	5.40	6.30	7.20	8.10	9.00	10.80	12.60	16.20	19.20	23.45
37	2	Drill Stock, and Drill for Soft Rock,	21.00	24.00	27.00	30.00	33.00	...	...	...	...	...
38	2	Boulder Cracker,	6.60	10.20	13.80	17.45	21.00	28.20	35.40	...	...	...
39	2	Drift Hammer,	2.50	...	...	...	...	...	...	...	...	...
40	2	Cross Head,	4.80	5.70	6.60	7.30	8.40	10.25	12.60	15.60	19.20	22.80
41	2	Hook,	...	2.10	...	...	...	...	3.10	...	...	...
42	2	"	...	3.30	...	...	...	...	...	...	...	...
43	2	"	...	.50	...	...	...	...	...	...	...	...
44	2	"	...	2.90	...	...	...	...	...	...	...	...
45	2	Catch Hook for Hauling Pipe,	8.00	8.00	8.00	8.00	8.00	9.00	9.00	9.00	9.00	9.00
46	2	Wrench Handle,	...	13.20	...	...	...	...	18.00	...	...	...
47	3	Gin Pulley, (12" Wheels),	...	16.20	...	...	...	...	...	...	...	...
48	3	Broach for Rock Work,	9.10	10.80	12.30	14.80	17.30	...	...	...	...	...
49	3	Socket Hook for Lifting Rods,	...	8.40	...	...	...	...	10.80	...	...	...
50	3	Bit,	...	18.00	...	...	...	...	...	...	...	...
51	3	Reamer,	...	18.00	...	...	...	...	...	...	...	...
52	3	Drill Stock and Drill for Soft Rock, with Cutters as ordered,	...	...	...	...	...	...	...	...	...	...
53	3	Valve Socket for Catchall,	...	30.00	...	...	...	...	...	...	...	...
54	3	Pair of Jars,	...	...	...	...	...	...	...	...	...	...
55	3	Sand Pump, (Galvanized Iron), 7' long, 3" diam., heavy iron,	...	20.00	...	...	...	...	...	...	...	...
56	3	Combination Augur,	...	...	...	...	70.00	81.00	90.00	99.60	110.50	120.00

CLASS EIGHTH.—*Continued.*

No. PLATE.

62 4

CAST IRON ARTESIAN WELL PIPE, WITH BOLLES' PATENT FLUSH JOINT.

Nominal Diameter.	Inside Diameter at Joint.	Outside Flush Diameter.	Length of each Pipe.	Price, per Foot, with Connecting Band.	Price of each Bottom Pipe and Connecting Band, with Bottom Band and Steel Cutting Edge.
Inches.	Inches.	Inches.	Feet.	\$ c.	\$ c.
12	11 $\frac{7}{8}$	13 $\frac{3}{4}$	10	6.65	99.67
10	10	11 $\frac{5}{8}$	9	5.90	72.21
8	7 $\frac{7}{8}$	9 $\frac{5}{8}$	8	3.90	47.60
6	5 $\frac{5}{8}$	6 $\frac{1}{2}$	8	2.63	32.55
5	5	6 $\frac{1}{4}$	9	2.26	26.15

63 4

CAST IRON DRIVING PIPE, BOLLES' PATENT FLUSH JOINT.

THE ENDS OF THE PIPES TURNED ACCURATELY TO RING GAUGES, AND SQUARED OFF IN LATHE. THE WROUGHT IRON BAND, OF THE BEST IRON, CAREFULLY WELDED AND SIZED TO SHRINK ON. LENGTHS EIGHT FEET.

DIAMETER, INCHES,	12	10	8	6	5
	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Price, per foot, including Connecting Bands,	16.80	13.00	7.09	4.79	4.14
Price, per foot, without Bands,	15.62	12.00	6.33	4.42	3.80
Price for Connecting Band, separate,	9.62	8.00	6.23	2.80	2.62
Price for Bottom Band with steel edge, separate,	15.00	12.82	7.13	5.03	4.57
Price for heavy Top Band,	10.31	9.26	8.55	5.35	5.02

64 4

HEAVY WROUGHT IRON ARTESIAN WELL TUBE,

WITH SCREW AND SOCKET, OR WITH FLUSH JOINTS, FINISHED SMOOTH INSIDE.

Inside Diameter, inches,	1 $\frac{1}{2}$	2	2 $\frac{1}{2}$	3	3 $\frac{1}{2}$	4	4 $\frac{1}{2}$	5	6	7	8
Price, per foot,	.30	.45	.65	.94	\$1.16	\$1.44	\$1.75	\$2.00	\$2.88	\$4.00	\$5.00

65 4

LIGHT WROUGHT IRON ARTESIAN WELL TUBE, OR OIL WELL CASING,

WITH SCREW AND SOCKET, OR WITH INSERTED JOINT, FINISHED SMOOTH INSIDE.

Diameter. Actual Outside.	Diameter. Nominal Inside.	Price, Per Foot.
1 $\frac{3}{4}$ in.	1 $\frac{1}{2}$ in.	\$0.33
2 $\frac{1}{4}$ in.	2 in.	.38
2 $\frac{1}{2}$ in.	2 $\frac{1}{4}$ in.	.42
2 $\frac{3}{4}$ in.	2 $\frac{1}{2}$ in.	.48
3 in.	2 $\frac{3}{4}$ in.	.55
3 $\frac{1}{4}$ in.	3 in.	.60
3 $\frac{1}{2}$ in.	3 $\frac{1}{4}$ in.	.66
3 $\frac{3}{4}$ in.	3 $\frac{1}{2}$ in.	.83
4 in.	3 $\frac{3}{4}$ in.	1.00
4 $\frac{1}{4}$ in.	4 in.	1.12
4 $\frac{1}{2}$ in.	4 $\frac{1}{4}$ in.	1.24
5 in.	4 $\frac{3}{4}$ in.	1.50
5 $\frac{1}{4}$ in.	5 in.	1.60
5 $\frac{1}{2}$ in.	5 $\frac{3}{8}$ in.	1.75
6 in.	5 $\frac{5}{8}$ in.	1.85
6 $\frac{5}{8}$ in.	6 $\frac{1}{4}$ in.	2.25
7 in.	6 $\frac{3}{8}$ in.	2.50
8 in.	7 $\frac{5}{8}$ in.	3.75
8 $\frac{5}{8}$ in.	8 $\frac{1}{4}$ in.	4.50

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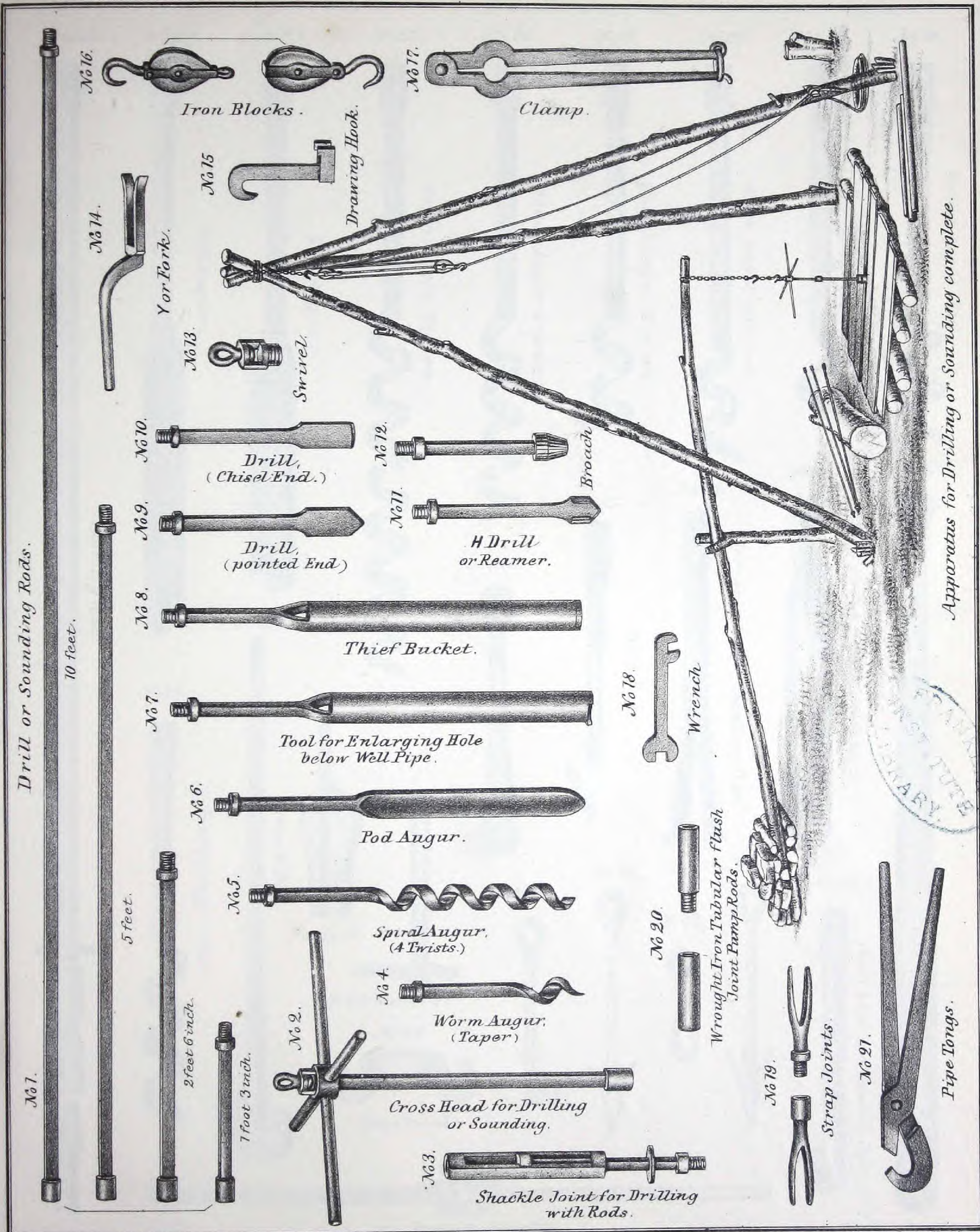
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Plate 7.



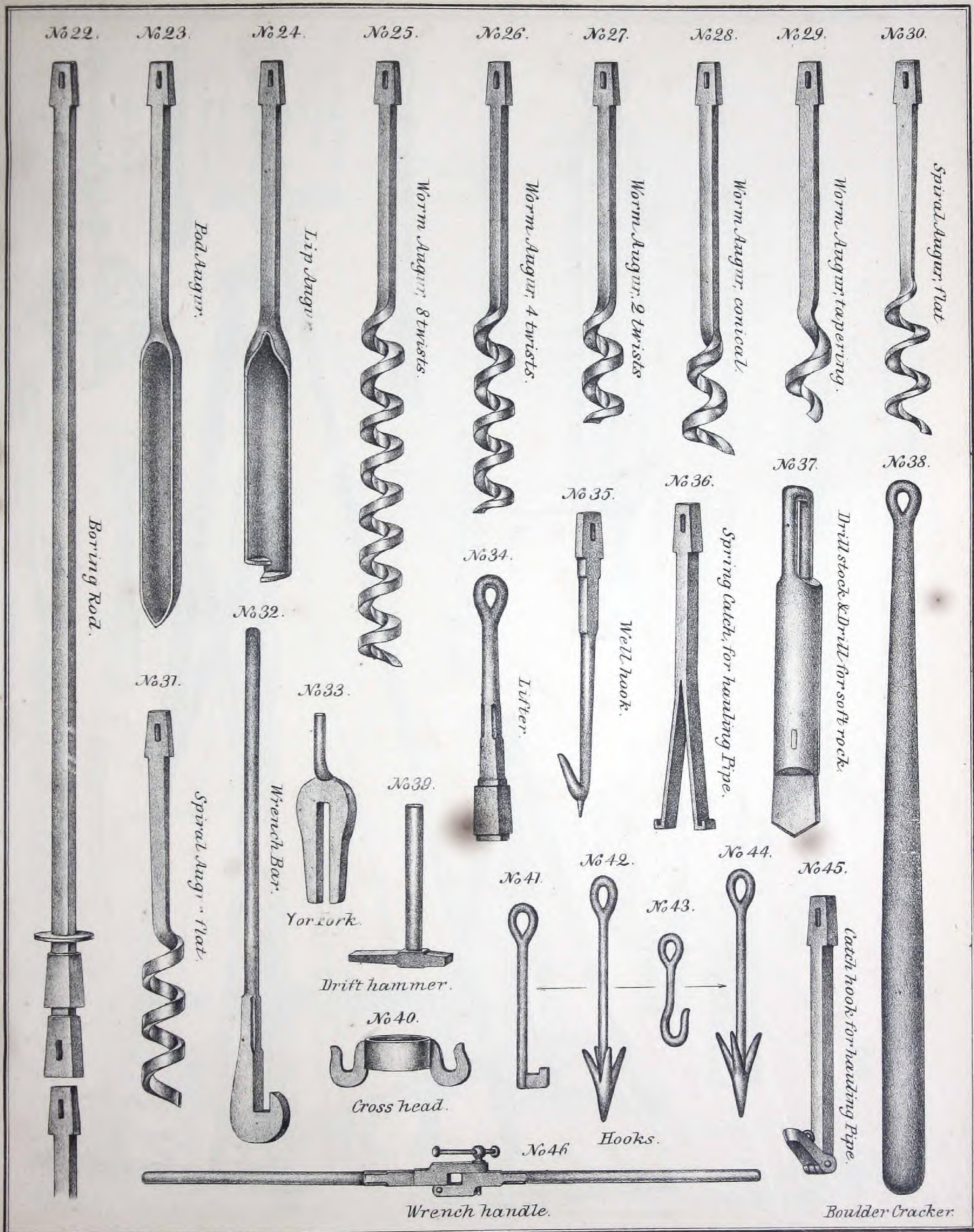


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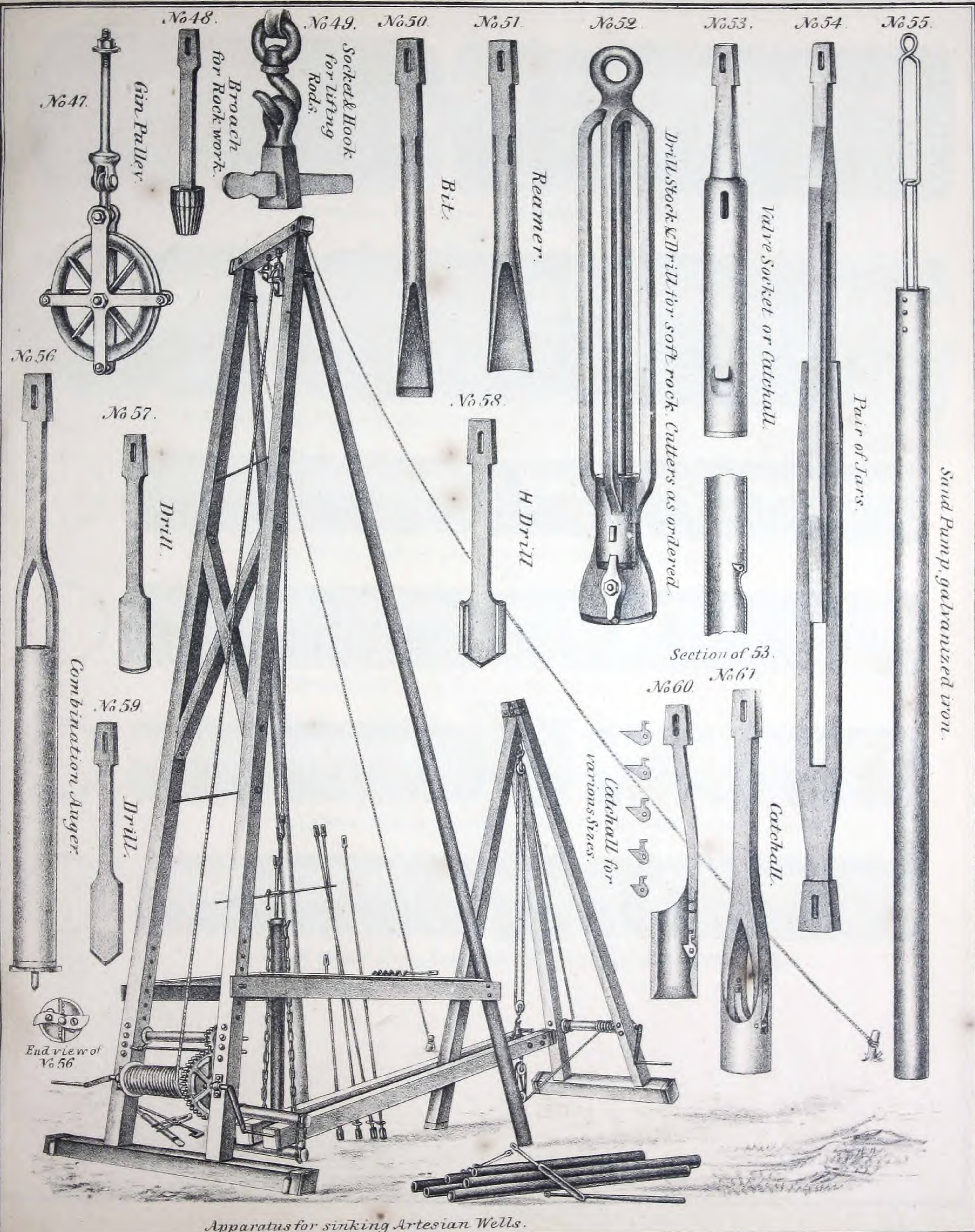


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Plate 3.



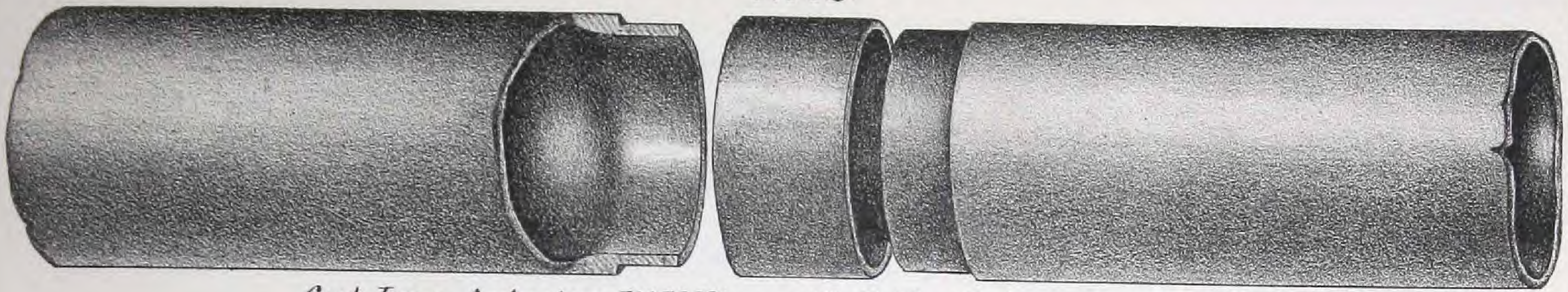
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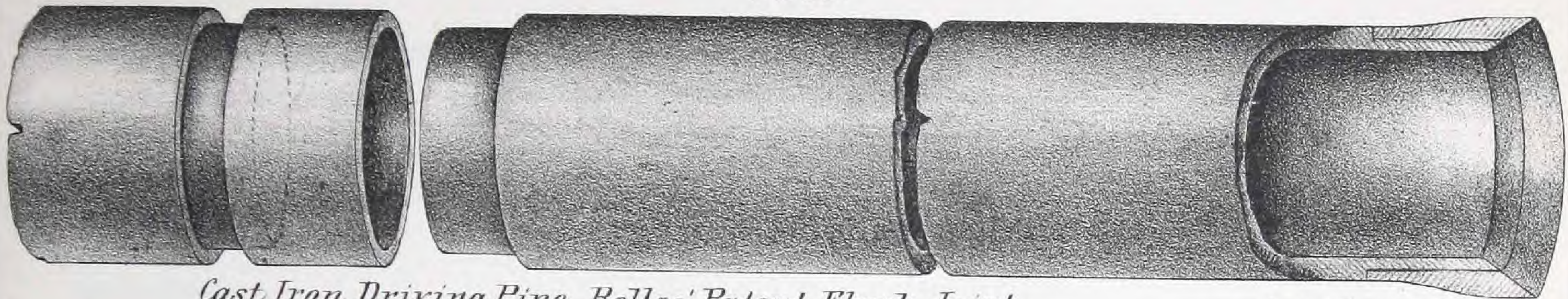
Plate 4.

No 62.



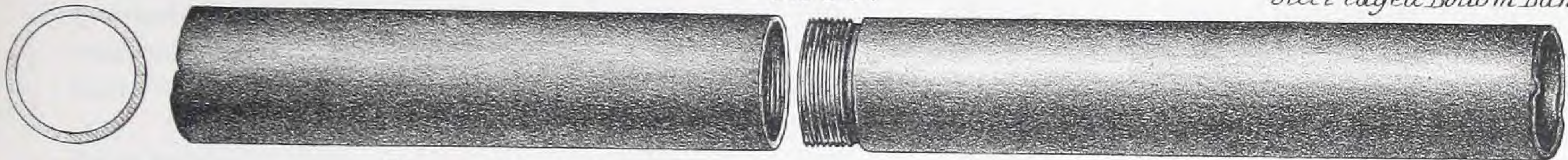
Cast Iron Artesian Well Pipe, with Bolles' Patent Flush Joint.

No 63.



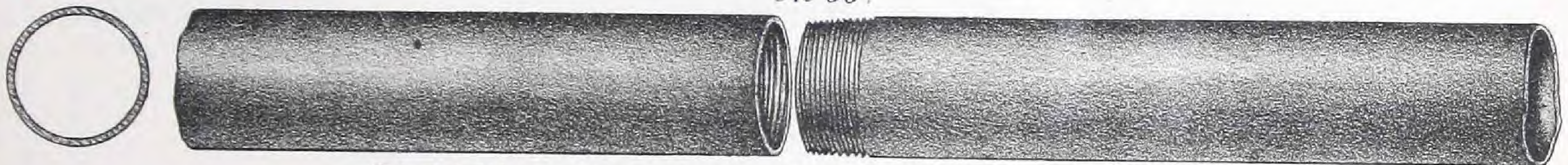
Cast Iron Driving Pipe, Bolles' Patent Flush Joint.

No 64.



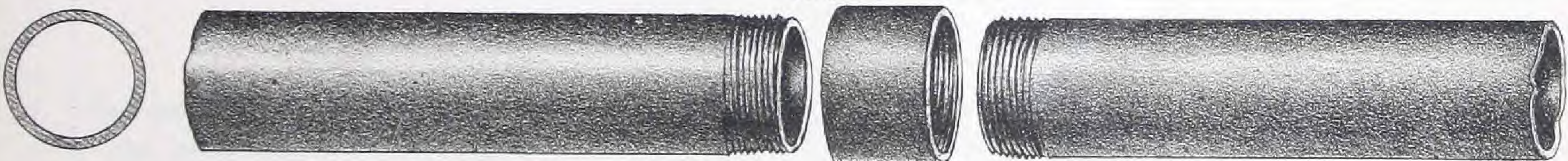
Heavy Wrought Iron Artesian Well Tube, Flush Joint.

No 65.



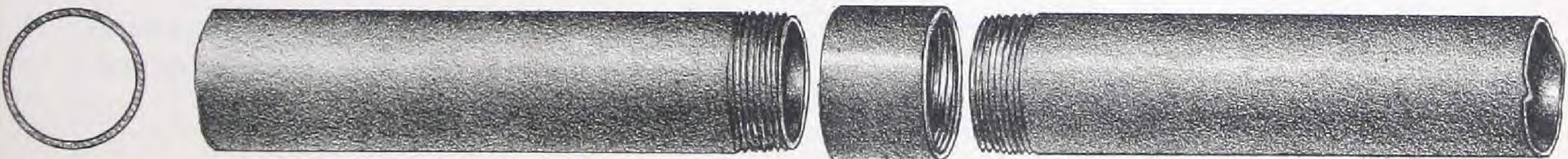
Light Wrought Iron Artesian Well Tube, Inserted Joint.

No 64.



Heavy Wrought Iron Artesian Well Tube, with Screw & Socket.

No 65.



Light Wrought Iron Artesian Well Tube, with Screw & Socket.

*Sect. of Bottom End with
Steel edged Bottom Band.*

Persons in ordering will please state the "Edition" they order from.

CLASS NINTH.

Every order for special articles must have accurate plans and dimensions attached; and no order, "same as before," will be received.

Any article for which no price is quoted on the list will be made only to special order, although such article may be shown in the illustrations.

No.	PLATE.		PRICE.		No.	PLATE.		PRICE.
			Plain.	Bronzed.				
1	1	Garden Seat,	7.50	9.00	39	3	Mantel Bracket, . . . . .	.30
2	1	" "	7.00	8.50	40	3	" " . . . . .	.50
3	1	Battlement Bracket,	9.50		41	3	Window " . . . . .	.70
4	1	Brush Scraper,	1.40		42	3	Mantel Slab, O. G. edge, 2' 10" X 9"	1.25
5	1	Smoke Flue, @		per lb.			" " " " 2' 6" X 9"	1.15
6	1	" " @		per lb.	43	3	Gas Light Bracket,	15.00
7	1	Carpet Winding Machine,	9.00		44	3	" "	5.00
8	1	Pan Scraper,	1.20		45	3	" "	16.80
9	1	Umbrella Stand,	3.00	4.50	46	3	" "	2.00
10	1	" "	3.00	4.50	47	3	" "	1.60
11	2	Cast Iron Columns, any thickness, as ordered; also, special lengths, by stopping off in the sand, @			48	3	Gallery "	6.00
12	2				49	4	Philadelphia City Pattern Lamp Post,	15.00
13	2						Lantern and Glass,	5.10
14	2						Lamp Tube, Stem, Cock, and Burner,	2.25
15	2						Boxing for shipment, . . . . .	.95
16	2				50	4	Gallery Lamp Post, without Lantern,	5.00
17	2				51	4	Park " " " "	8.00
18	2				52	4	Gothic Column for Lantern, without Lantern,	50.00
19	2				53	4	Park Lamp Post, without Lantern,	8.00
20	2				54	4	Lamp Post, Morris, Tasker & Co.'s Pattern,	12.00
21	2	Foundation Column, @					Lantern and Glass,	5.10
22	2						Lamp Tube, Stem, Cock, and Burner,	2.25
23	2						Boxing for Shipment, . . . . .	.95
24	2				55	4	Plain Hitching Post,	4.50
25	2				56	4	Horse Head Hitching Post,	5.50
26	2				57	4	Octagon Hitching Post,	6.00
27	2				58	4	Ornamental Column Hitching Post,	4.50
28	3	Balcony Bracket,		5.00	59	4	Cap for Awning Post, . . . . .	.82
29	3	Mantel "		1.90			Base " " " "	2.04
30	3	Window " . . . . .		.70	60	4	Cap " " " "	1.86
31	3	Balcony "		1.40			Base " " " "	1.00
32	3	Mantel " . . . . .		.60	61	4	Cap " " " "	1.40
33	3	" "		1.30			Base " " " "	1.00
34	3	" " . . . . .		.70	62	4	Cap " " " "	1.46
35	3	" " . . . . .		.80			Base " " " " . . . . .	.68
36	3	Mantel and Shelf Bracket,50	63	4	Cap " " " "	1.90
37	3	" " " "60			Base " " " "	2.88
38	3	" " " "25	64	4	Cap " " " "90
							Base " " " "41

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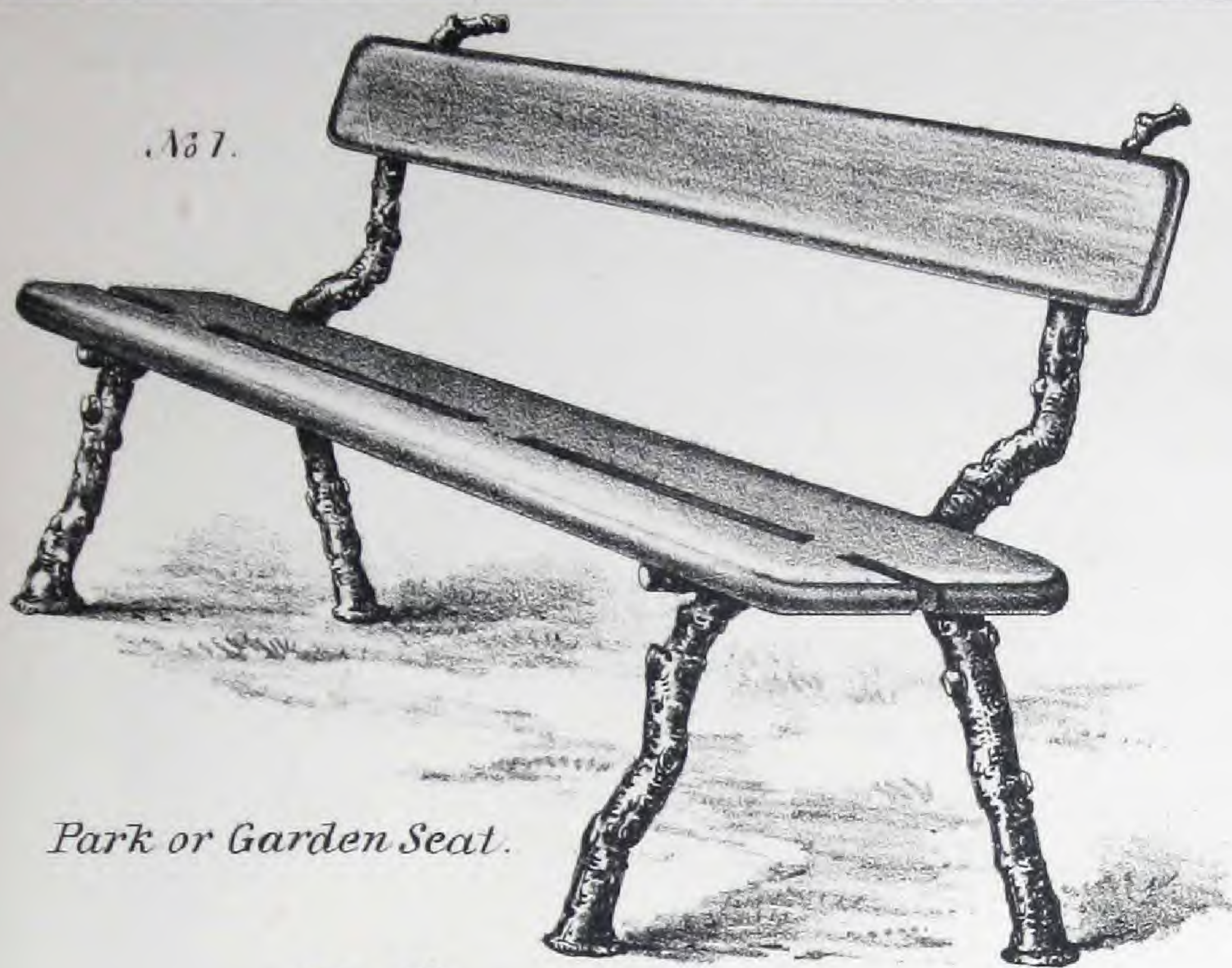
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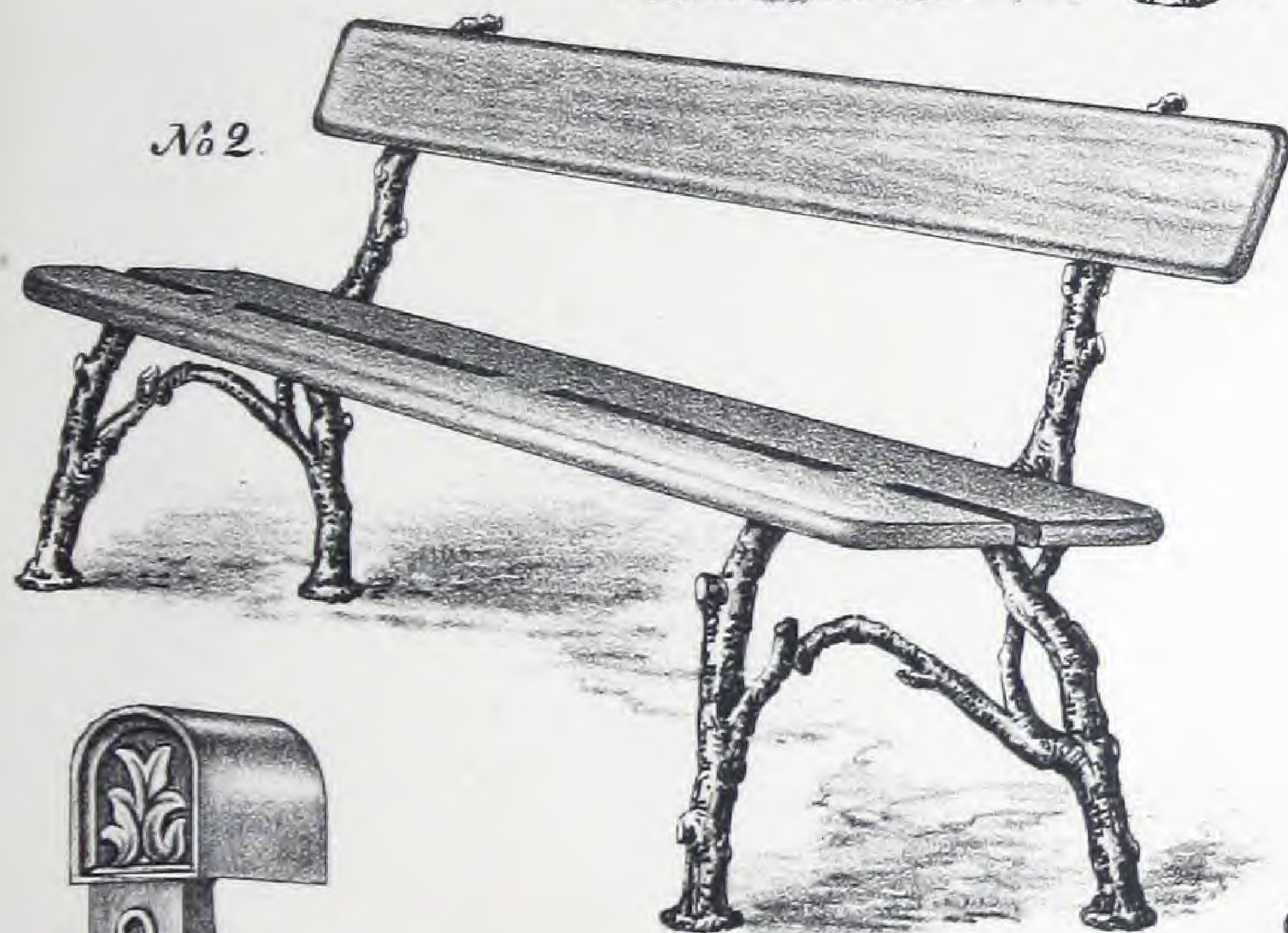
CLASS NINTH.

Plate 1.



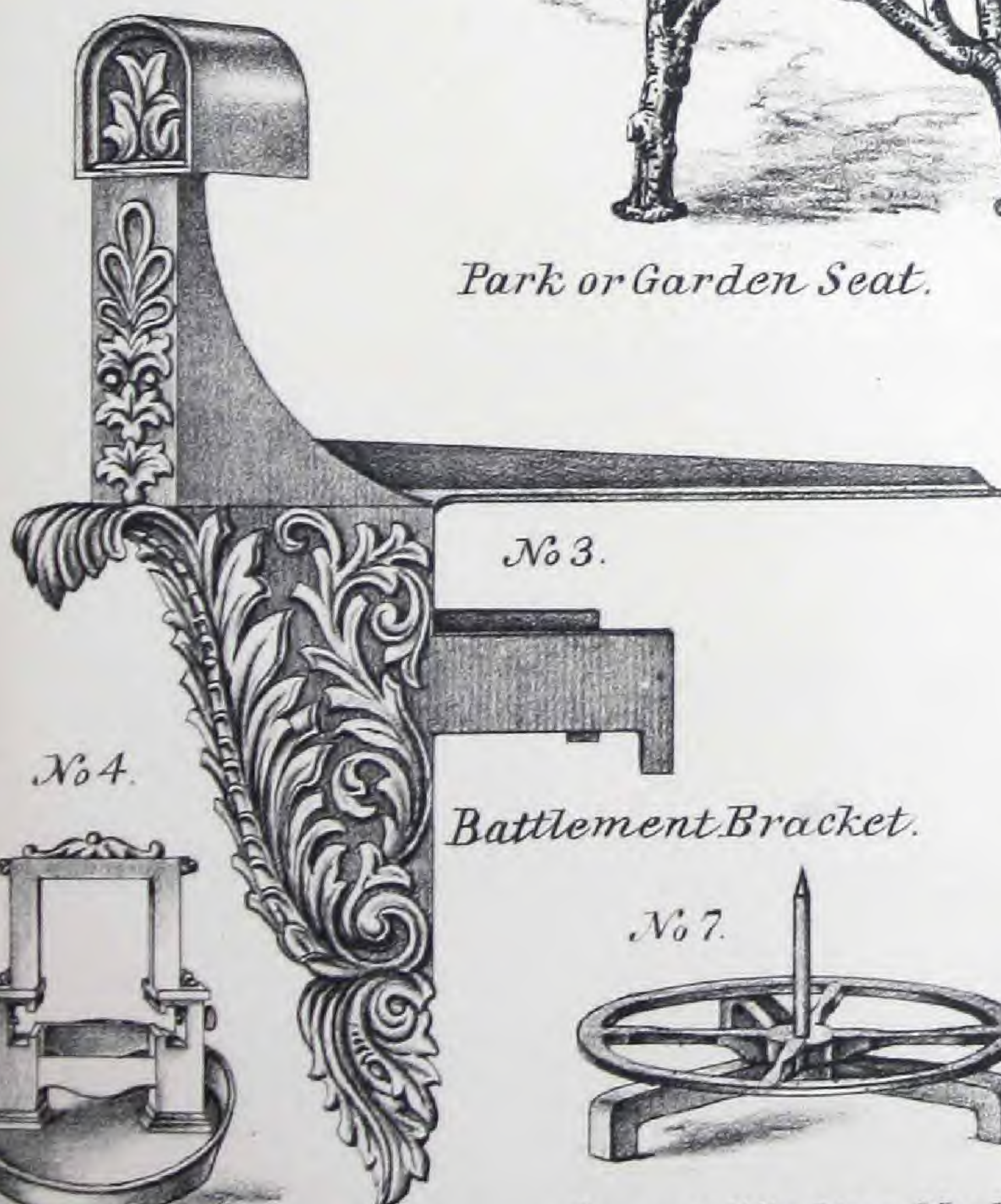
No 1.

Park or Garden Seat.



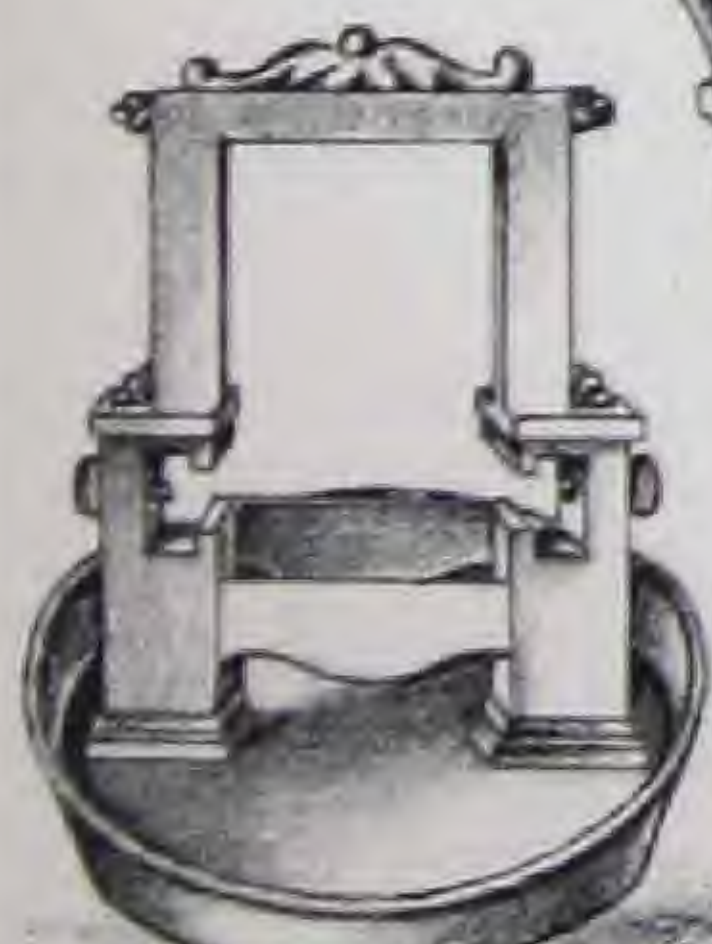
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Park or Garden Seat.



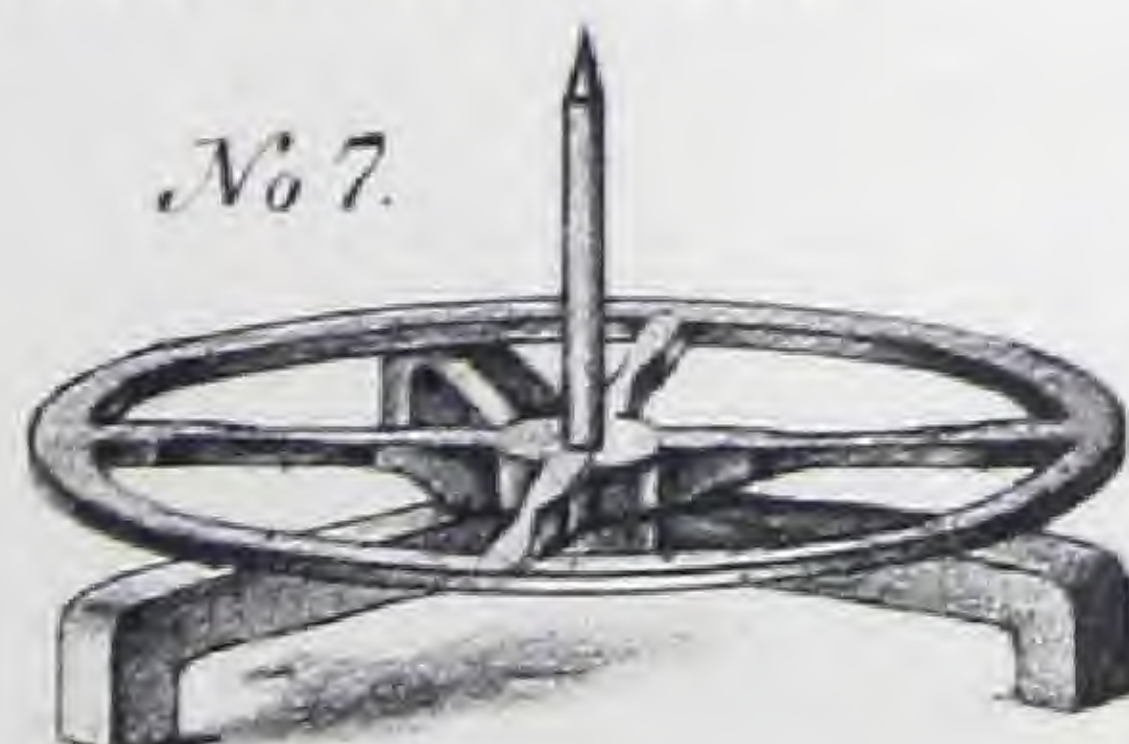
No 3.

Battlement Bracket.



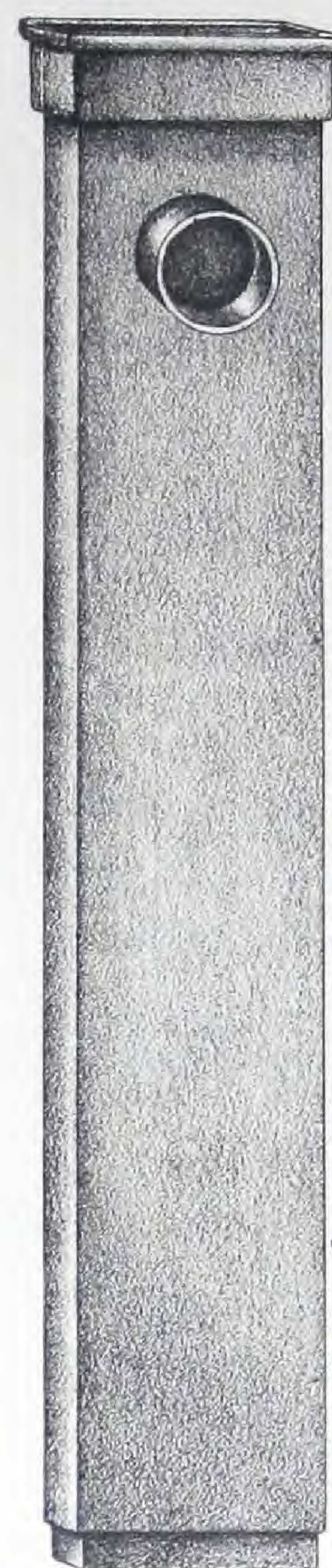
No 4.

Brush Scraper.



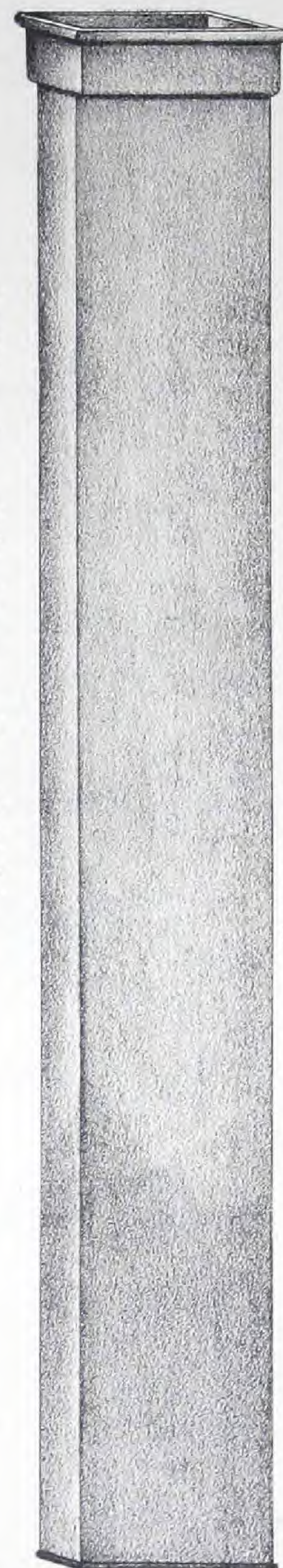
No 7.

Carpet Winding Machine.



No 5.

Smoke Flue.



No 6.

Smoke Flue.



No 9.

Umbrella Stand.



No 8.

Pan Scraper.



No 10.

Umbrella Stand.

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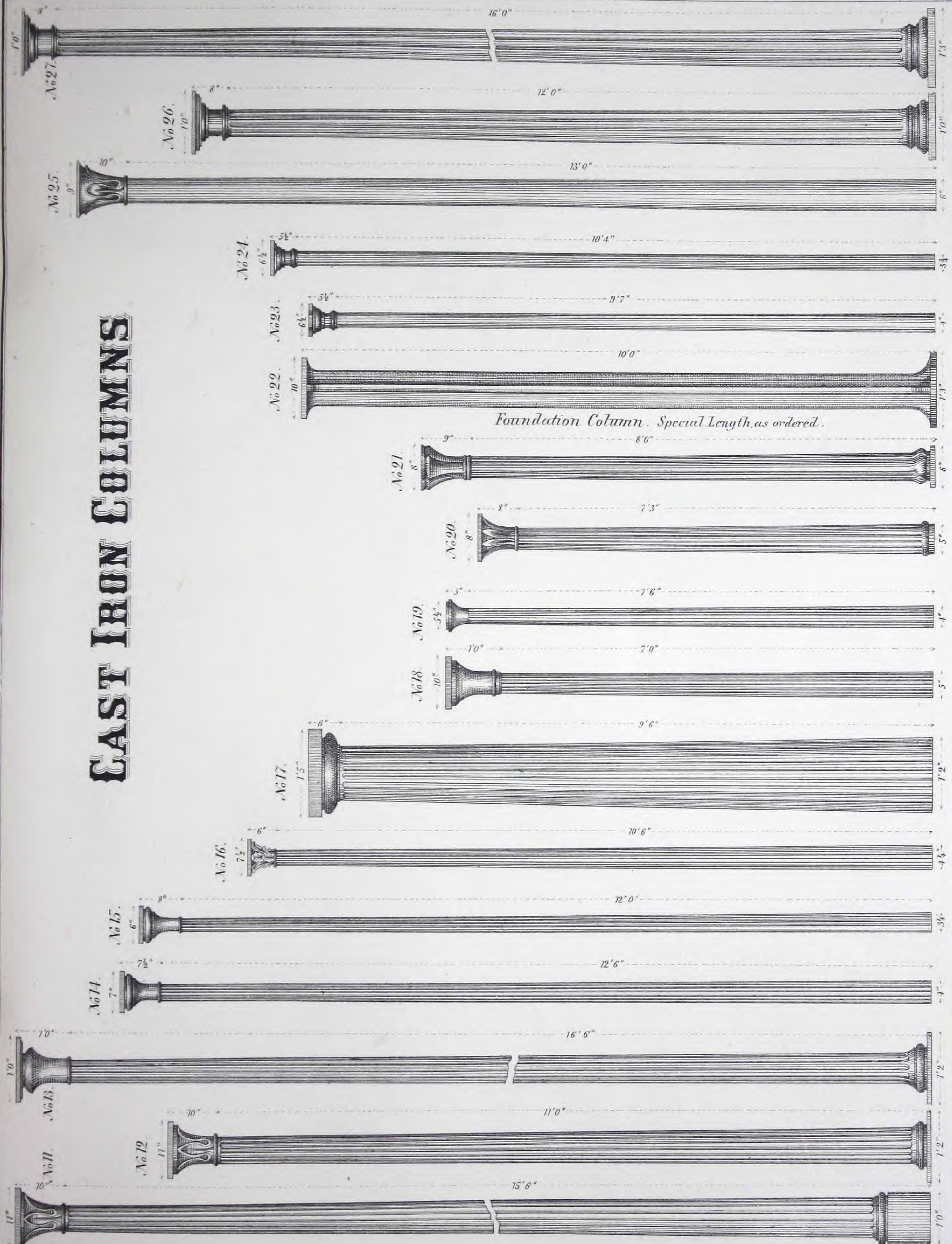
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Plate 2.

EAST IRON COLUMNS



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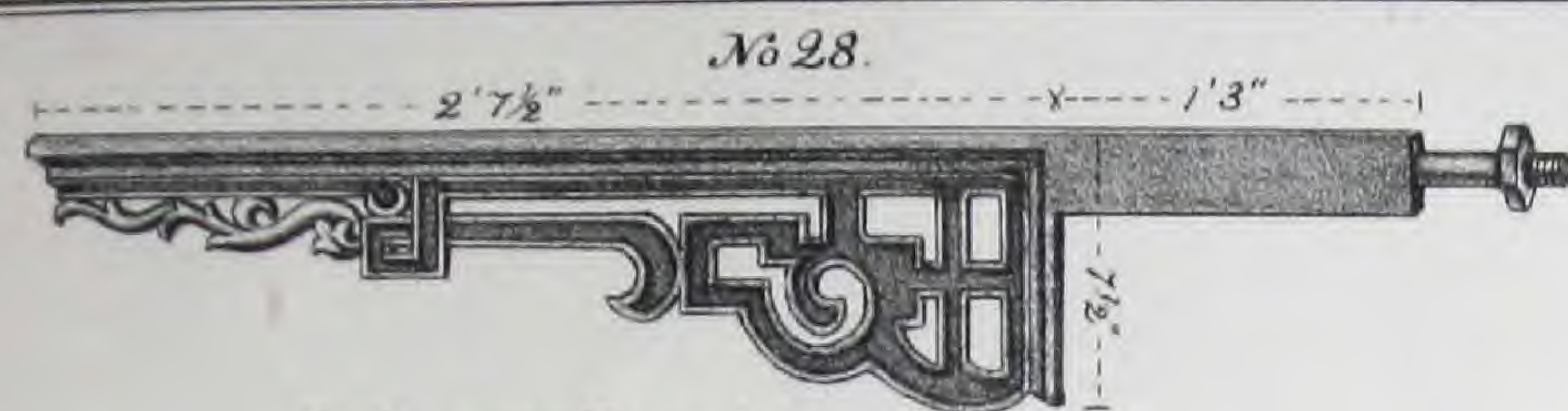
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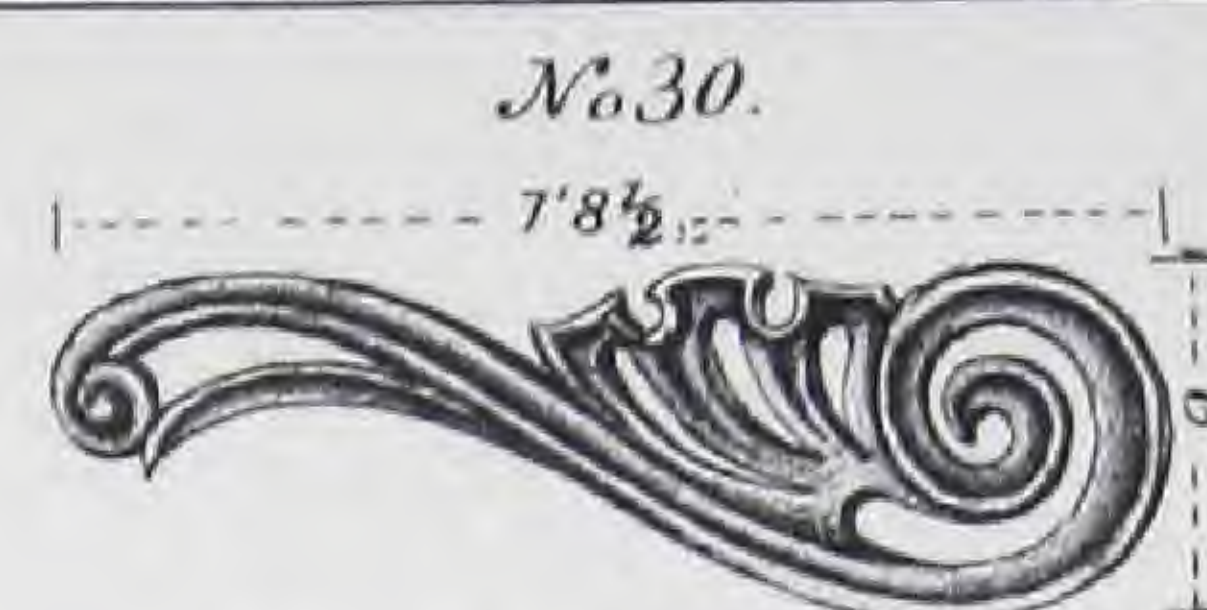
Plate 3.



Balcony Bracket



Balcony Bracket



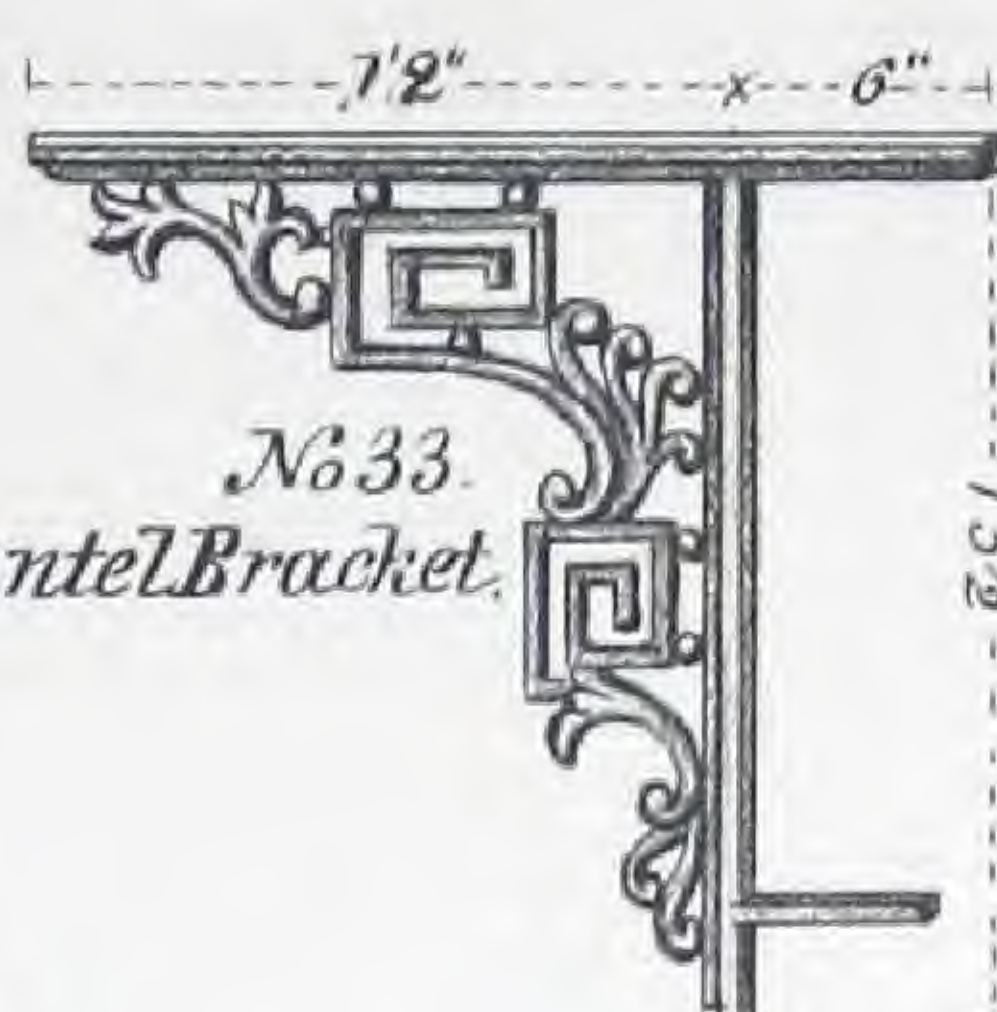
Shelf Bracket



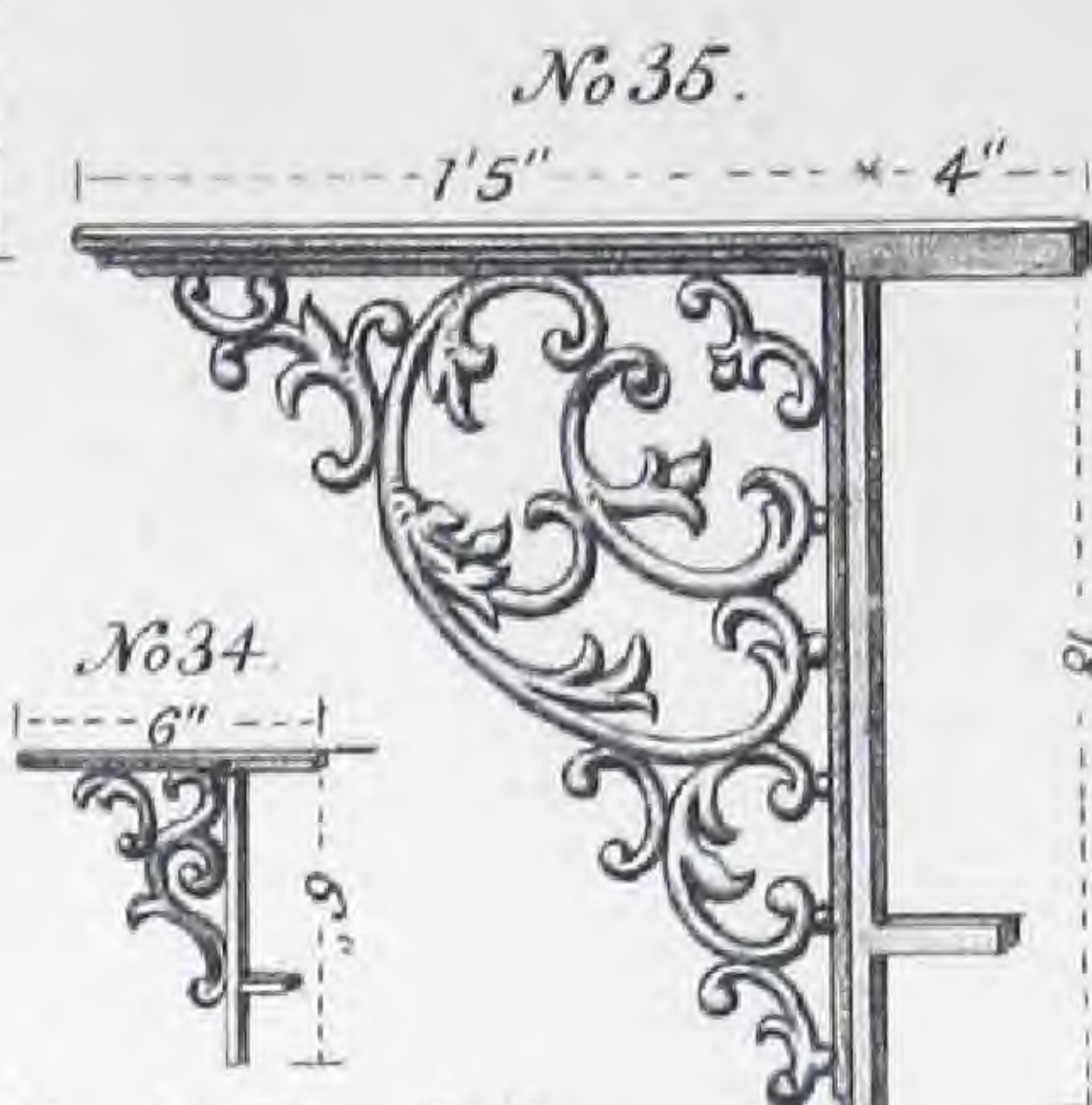
Balcony Bracket



Shelf Bracket



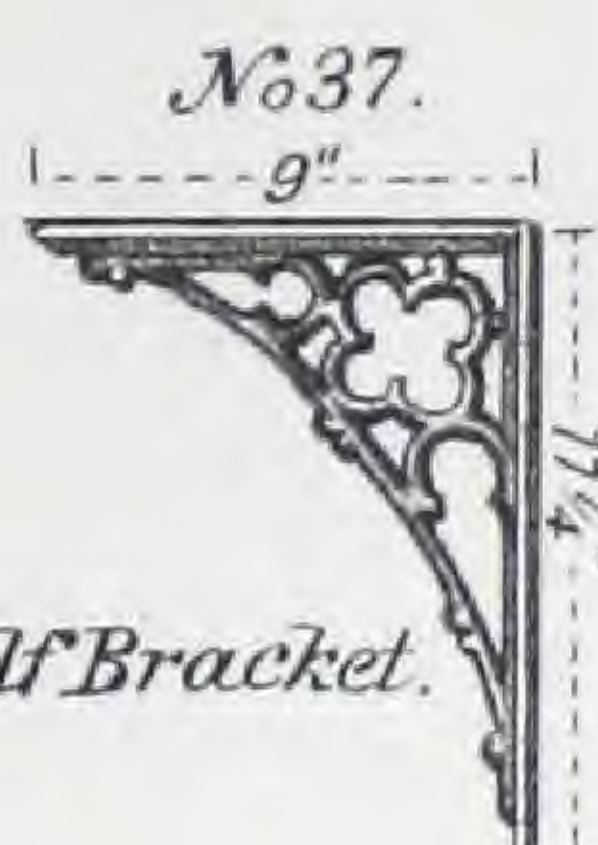
Mantel Bracket



Mantel Bracket



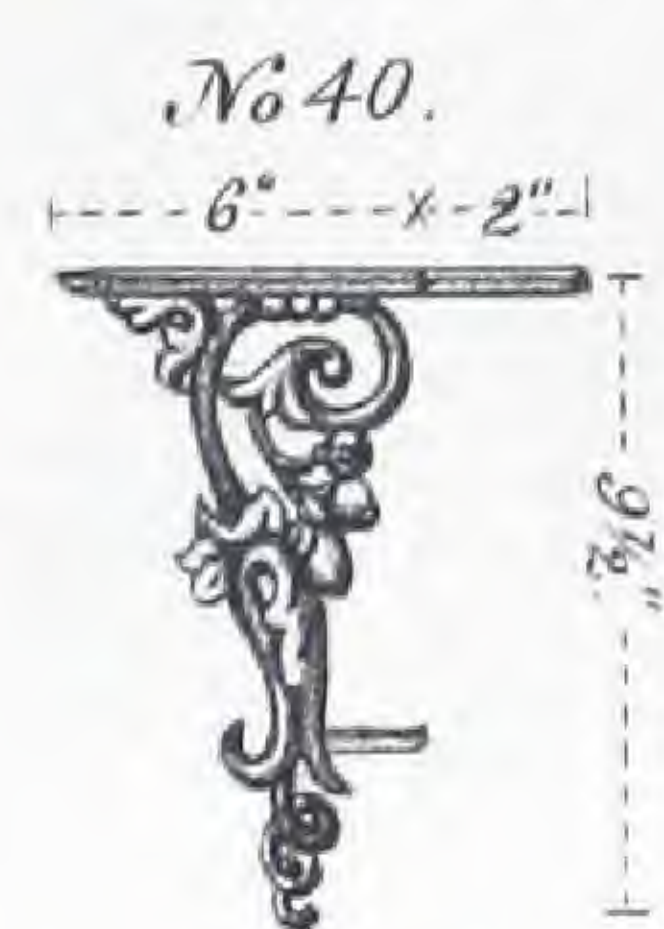
Shelf Bracket



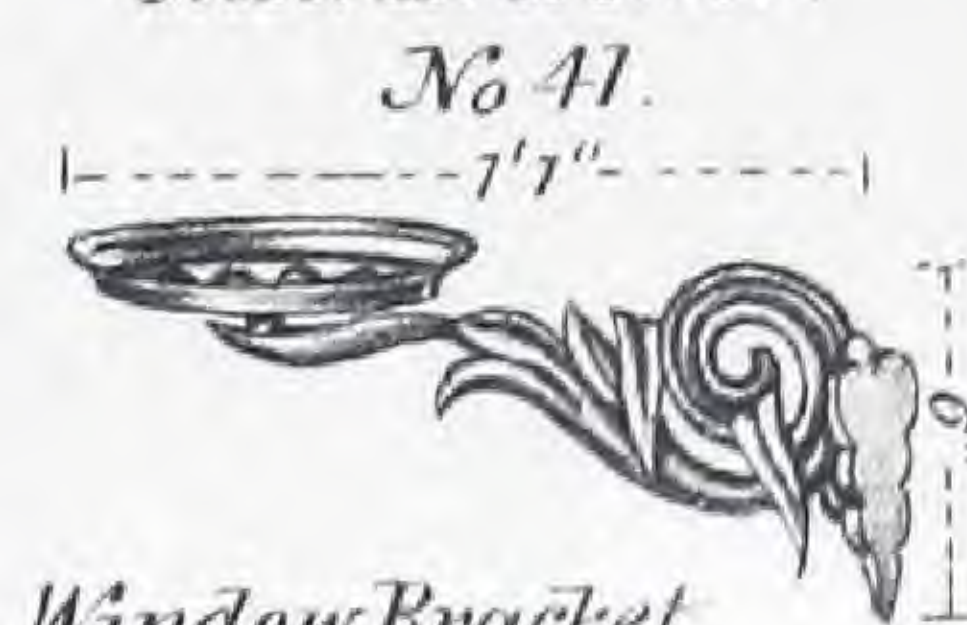
Shelf Bracket



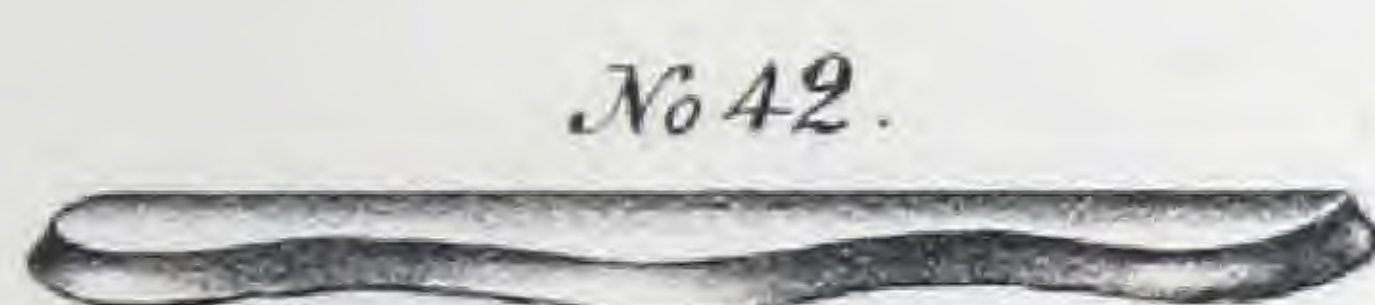
Mantel Bracket



Mantel Bracket



Window Bracket



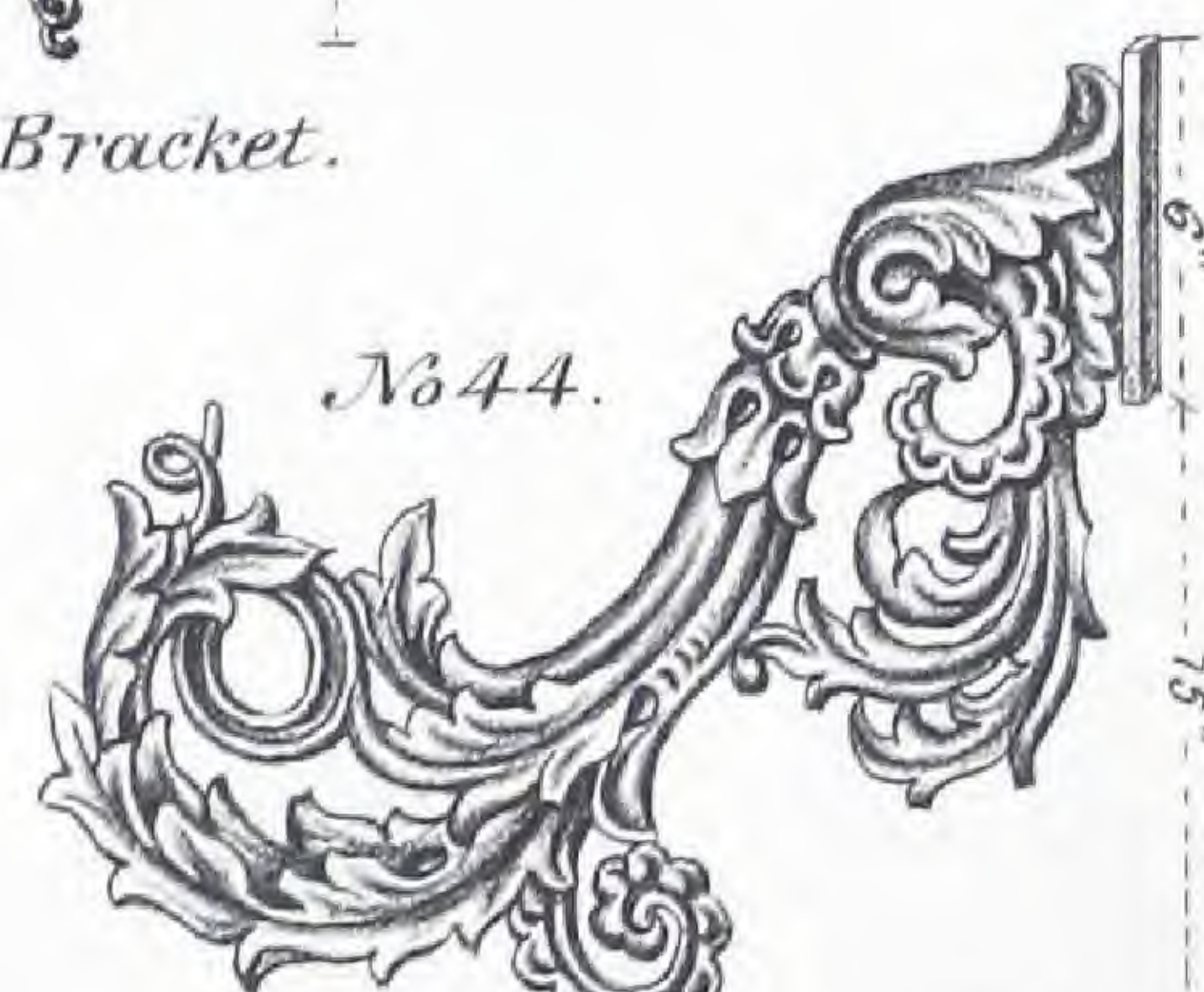
Mantel Slab



Mantel Bracket



Gas Light Bracket



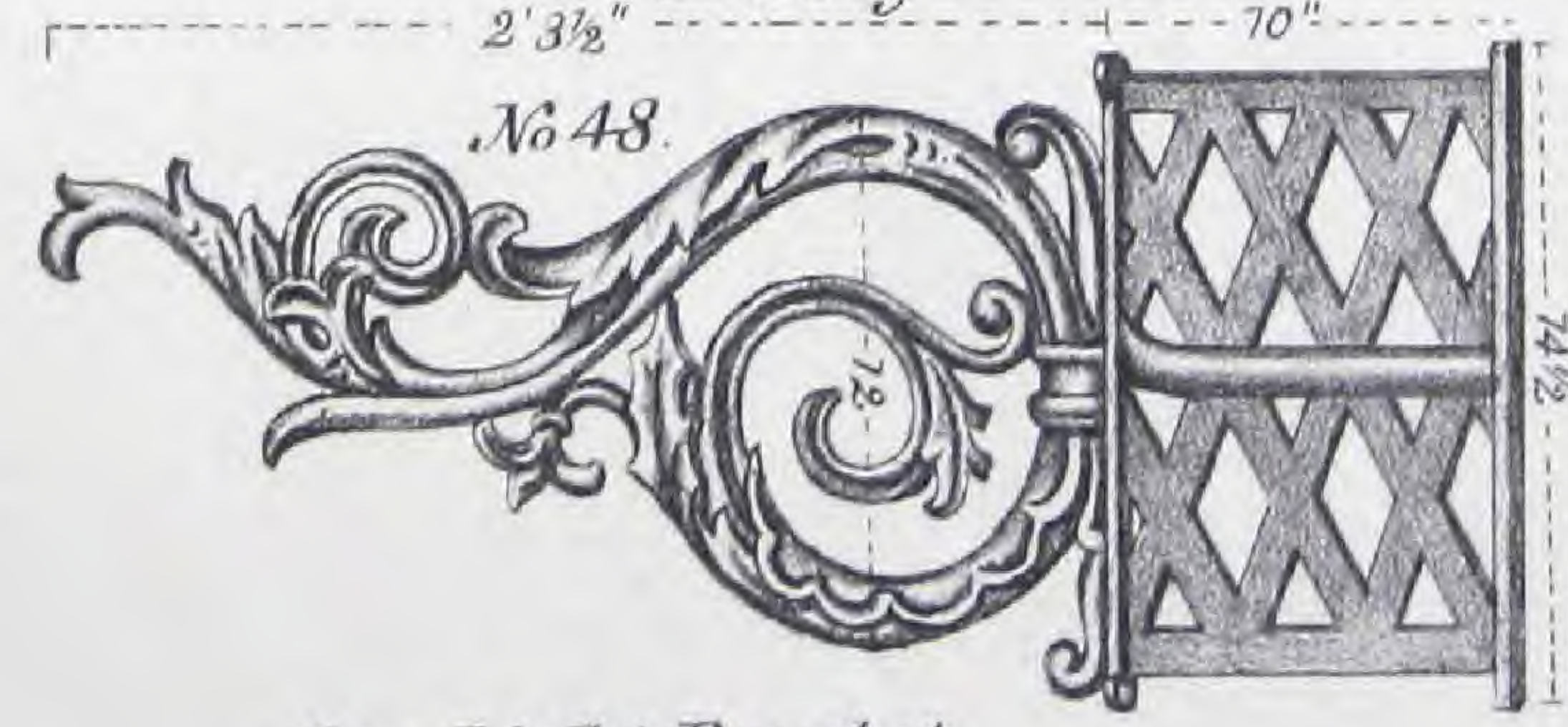
Gas Light Bracket



Gas Light Brackets



Gas Light Bracket



Gas Light Bracket

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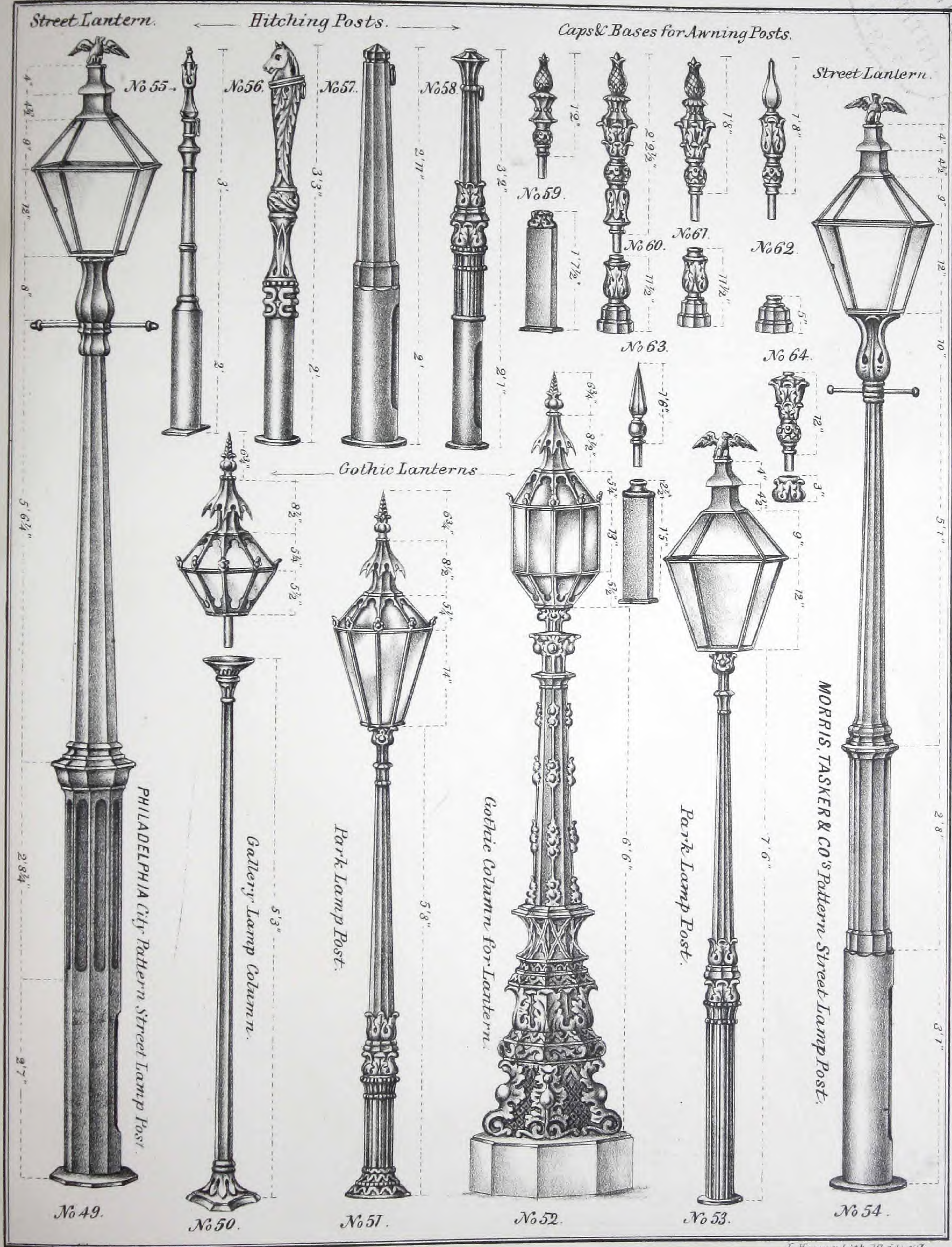
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Plate 4



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CANE MILL.

To extract the juice from the cane three cast-iron horizontal rollers are generally used, which have over the vertical rollers the advantage of being fed and worked more easily and smoothly.

These rollers are made of different sizes, to suit the capacity of the different mills.

The two lower rollers have edges, to keep the cane from falling off sideways.

On the shaft of the rollers are cog-wheels, to turn all the rollers at the same time.

On the side of the mill where the cane is put in, there is a space between the rollers of $\frac{3}{4}$ to $\frac{7}{8}$ of an inch; while on the other side, the rollers almost touch each other.

The greatest velocity with which the circumference of the rollers revolves is about ~~ten~~ ¹⁸ feet per ~~second~~ ^{minute}.

The cane is carried to the mill by a cane conductor, which is from 60 to 80 feet long, and sometimes still longer. The bagass is taken away by a movable platform of the same construction.

The juice gathers on the bed-plate and runs into a tank, from which it has to be pumped as quickly as possible into the defecators.

MOLINO DE CAÑAS.

Para extraer el jugo de la caña, se usan generalmente tres rollos ó cilindros horizontales de hierro colado, los cuales agarran y machacan las cañas con mas facilidad y regularidad que los cilindros verticales.

Los cilindros son de tamaños diferentes segun el caso. *o' molduro*

Los dos cilindros inferiores tienen un borde levantado á cada extremidad á fin de impedir las cañas de alejarse del molino.

Sobre los ejes de los cilindros se encuentran ruedas de encaje para moverlos todos al mismo tiempo.

Por el lado, por donde las cañas vienen deslizandose hácia el aparato, la distancia entre los cilindros es de $\frac{3}{4}$ á $\frac{7}{8}$ de una pulgada, mientras, al otro lado, casi se tocan los cilindros.

La mayor velocidad de los cilindros en su circunferencia es de ~~10~~ ¹⁸ piés, poco mas ó ménos, por ~~segundo~~ ^{minute}.

Se lleva la caña al molino por medio de un conductor de caña, el cual tiene unos 60 ó 80 piés de largo, y algunas veces aun mas. El bagazo se lleva afuera mediante una plataforma móvil de una construccion análoga al conductor de caña.

El jugo ó guarapo cayendo sobre la cama del aparato corre en un tanque, ó recipiente de donde se ha de sacar por una bomba lo mas pronto que sea posible para llevarse en las defecadoras.

MOINHO DA CANNA.

Para extrair o succo da canna se usa geralmente tres cilindros horizontaes de ferro fundido, os quaes tem sobre os cilindros verticaes a vantagem de ser fornecidos e trabalhados com mais facilidade e suavidade.

Estes cilindros se fazen de diferentes tamanhos segúndo a capacidade dos diferentes moinhos.

Os dois ultimos cilindros tem molduras para não deixar cair a canna d'os lados.

Sobre o eixo d'os cilindros ha rodas dentadas para girar todos elles a hum mesmo tempo.

Da banda do moinho de adonde se pon a canna ha hum espaço entre os cilindros de $\frac{3}{4}$ a $\frac{7}{8}$ de pollegada e d'outra banda os cilindros quasi tocaõ hum a outro.

A mais grande velocidade com que a circonferecia d'os cilindros revolve he cerca de ~~10~~ ¹⁸ pes por ~~segundo~~ ^{minute}.

A canna he conducida a o moinho por hum conductor que he de 60 a 80 pes de comprimento e algunas veces ahinda mais comprido. O bagaço se remove por huma plantaforma movibel da misma construcção.

O succo se recolhe sobre a calha de baixo e passa entre hum tanque do qual precisa bombarse entre os defecadores.

MOULIN A CANNES.

Pour extraire le jus de la canne, on fait usage généralement de trois rôles ou cylindres en fonte horizontaux, qui offrent le double avantage d'une alimentation plus facile et d'un fonctionnement plus régulier que les cylindres verticaux.

Ces cylindres sont de différentes dimensions selon les besoins de l'exploitation.

Les deux cylindres inférieurs ont un rebord à chaque extrémité, afin d'empêcher que les cannes ne tombent de côté.

Sur les axes des trois cylindres se trouvent des roues d'engrenage qui les font mouvoir tous en même temps.

Du côté où la canne arrive pour s'engager dans l'appareil, l'espace entre les cylindres est de $\frac{3}{4}$ à $\frac{7}{8}$ d'un pouce, tandis que de l'autre côté, les cylindres se touchent presque.

Le mouvement de révolution de la circonférence des cylindres, à son maximum, est d'environ ~~10~~ ¹⁸ piés par ~~second~~ ^{minute}.

Les cannes sont amenées par une porteuse ou tablier sans fin, généralement de 60 à 80 piés de long, mais parfois d'une longueur encore plus considérable. La bagasse est enlevée par un tablier mobile analogue au précédent.

Le vesou tombe sur la table qui supporte l'appareil et coule ensuite dans un réservoir d'où il faut le pomper le plus tôt possible et le faire passer dans les défécateurs.

MUEHLE.

Zur Gewinnung des Saftes dienen meistens drei horizontal liegende Walzen, die das Rohr am bequemsten und regelnmaessigsten einbringen lassen. Die gusseisernen Walzen haben verschiedene Durchmesser je nach der zu vollbringenden Arbeit. Die zwei untern sind mit Raendern versehen damit das Rohr nicht seitwaerts entweichen kann.

An den Achsen der Walzen sind in einander greifende Zahnraeder.

Die Walzen an der Seite, wo das Rohr zuerst eintritt haben einen Zwischeraum von $\frac{3}{4}$ bis $\frac{7}{8}$ Zoll, wohingegen an der andern Seite sich die Walzen fast beruehren.

Fuer die beste Drehungs geschwindigkeit an der Peripherie der Walzen wird ~~10~~ ¹⁸ Fuss in der ~~Secunde~~ ^{minute} angegeben.

Das Rohr wird durch einen Cane Conductor, der 60 bis 80 auch mehr Fuss lang ist zur Muehle gebracht und der Rueckstand oder die Bagasse wird durch eine aehnliche sich fort bewegende Platform von der Muehle entfernt.

Der Saft sammelt sich an der Bodenplatte und fliesst in einen Behaelter aus dem derselbe so schnell als moeglich zu den Defekatoren oder Scheidepfannen gepumpt wird.

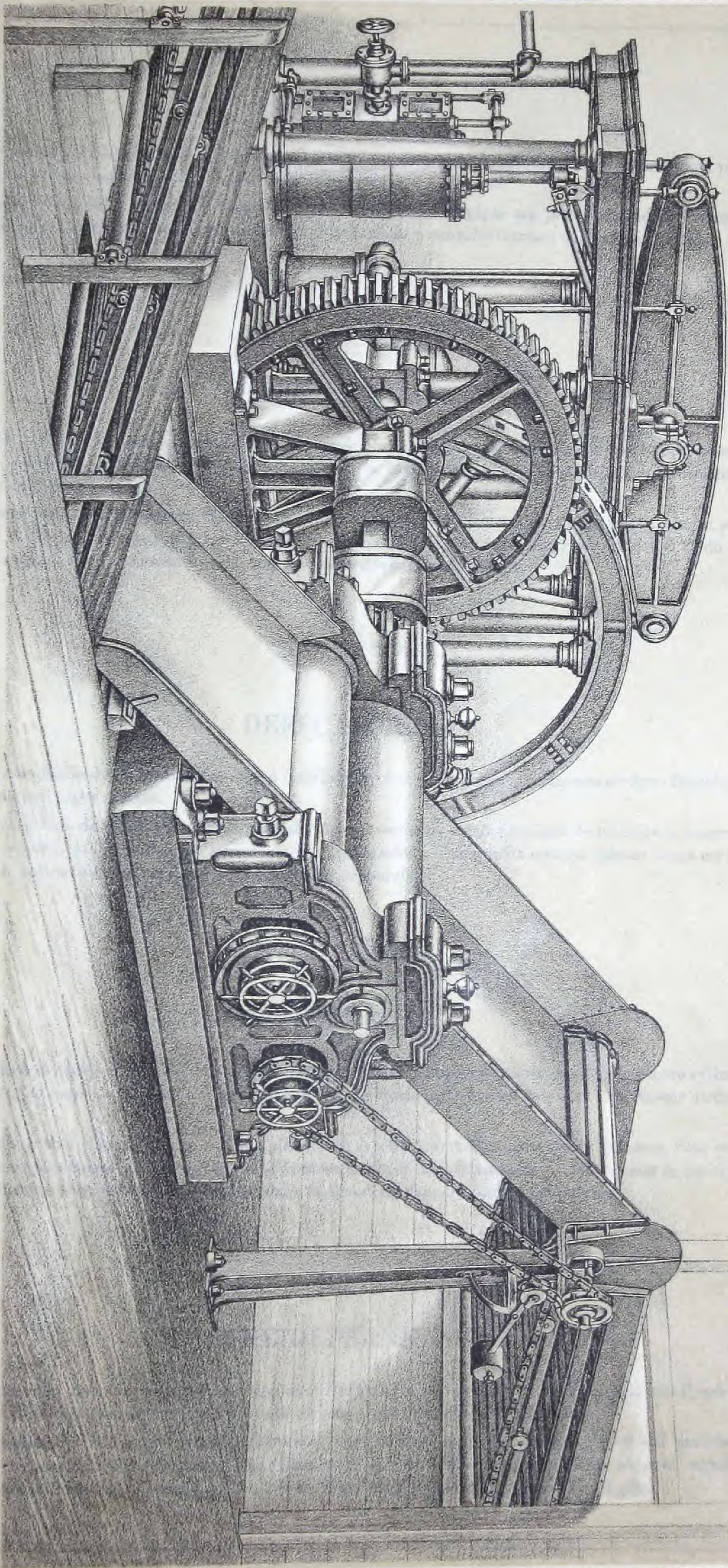
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MILL, DOUBLE GEAR & ENGLISH
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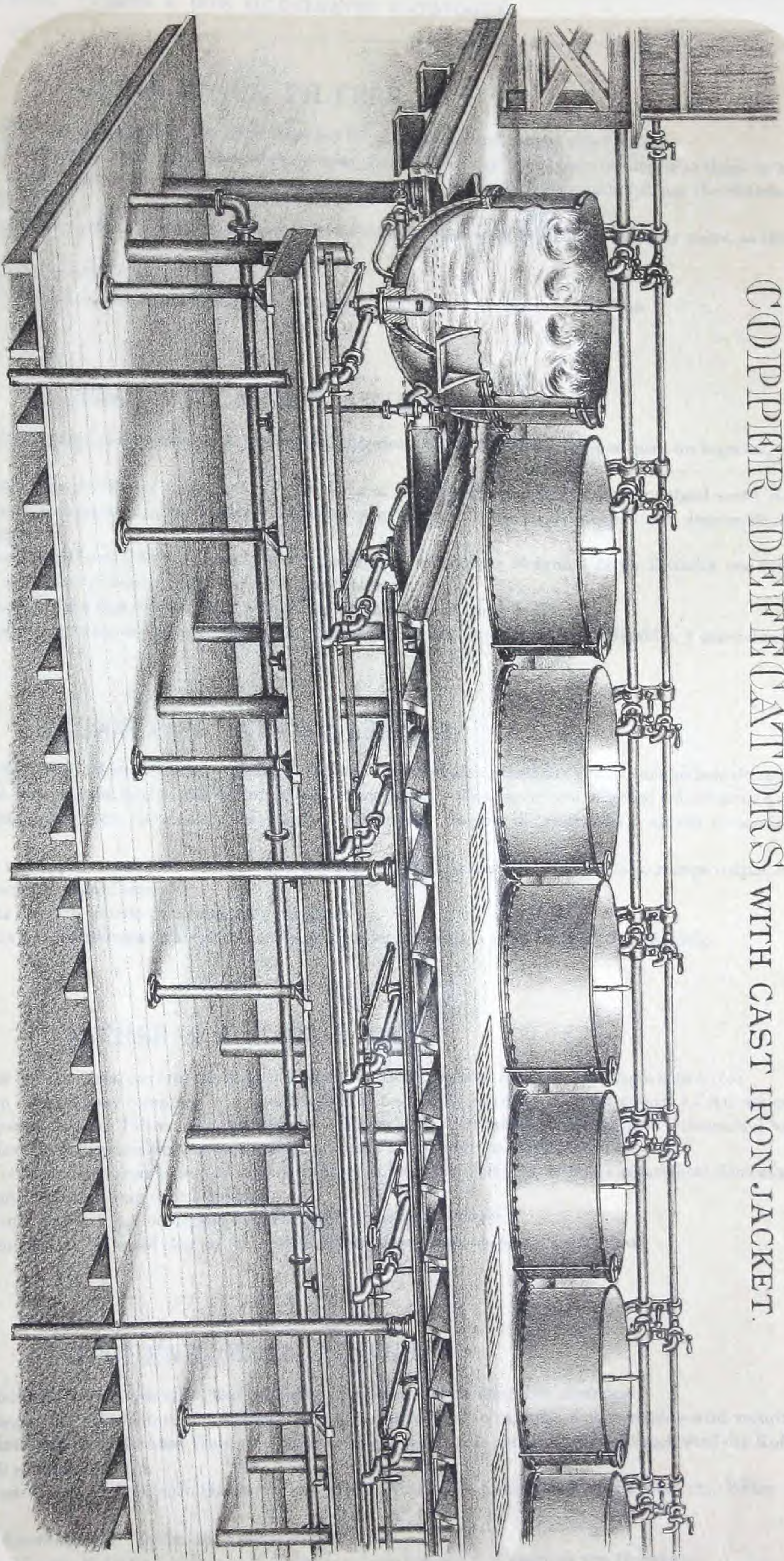
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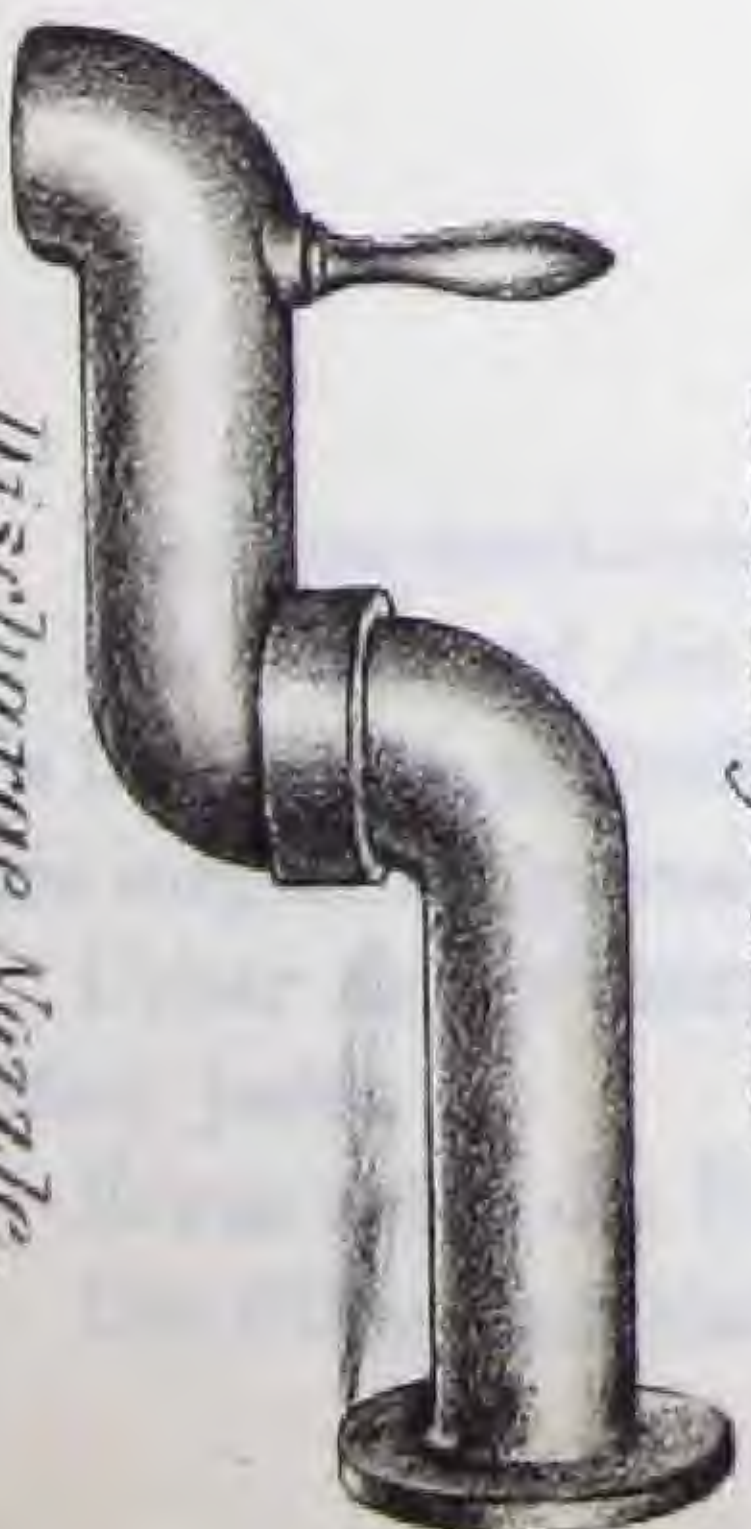
Waste-Water Valve.



Steam Valve.



Discharge Lock.



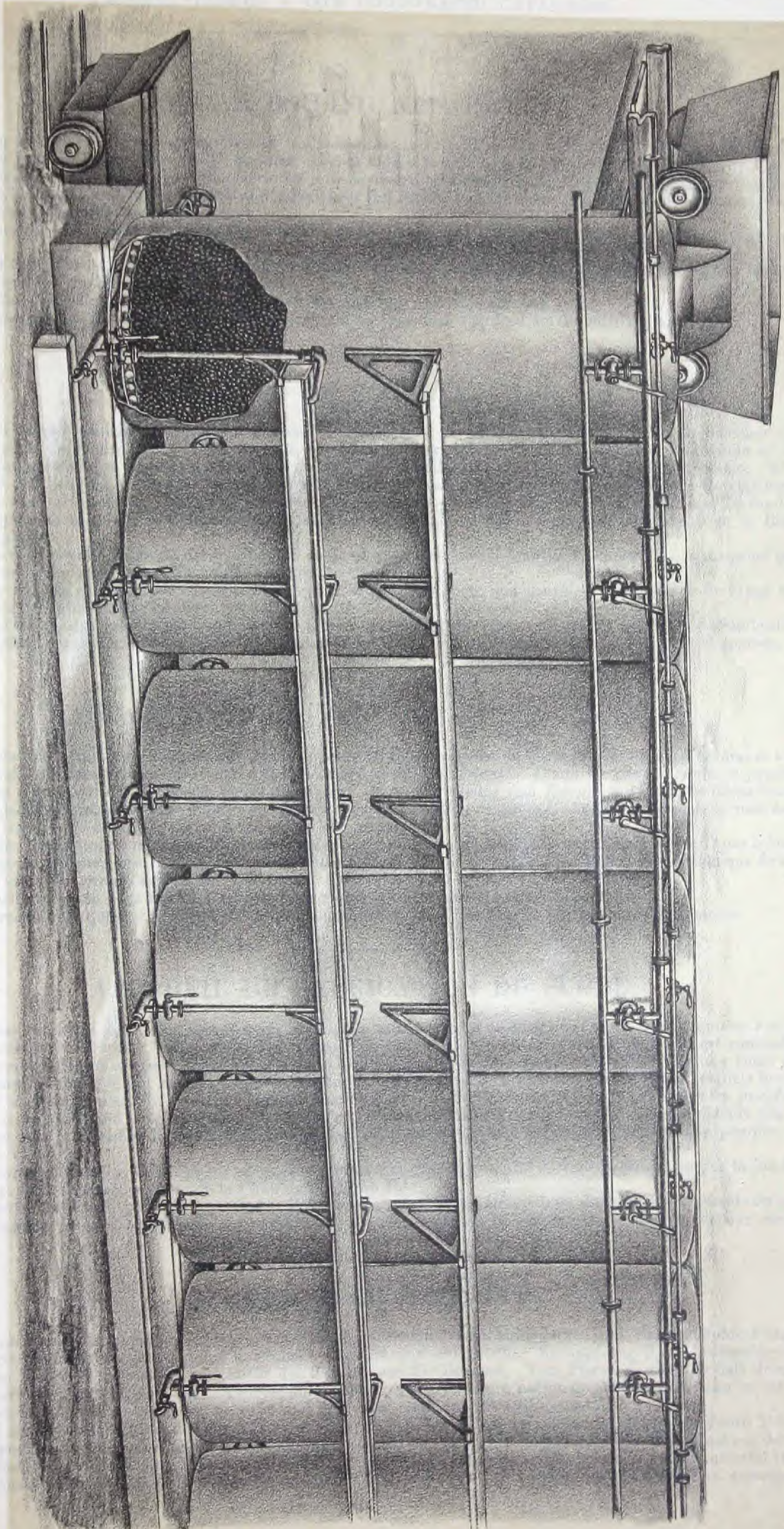
Discharge Nozzle.

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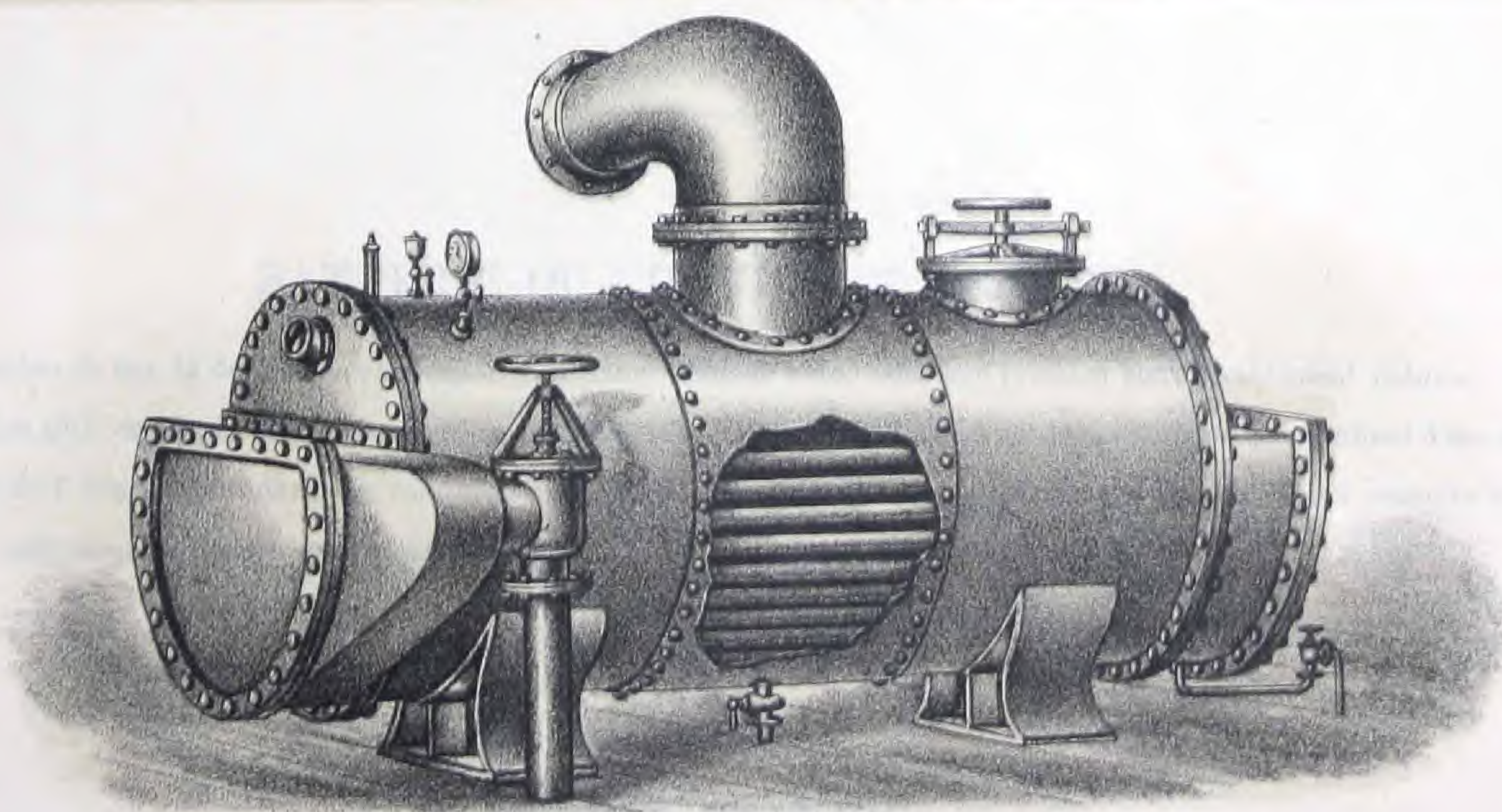
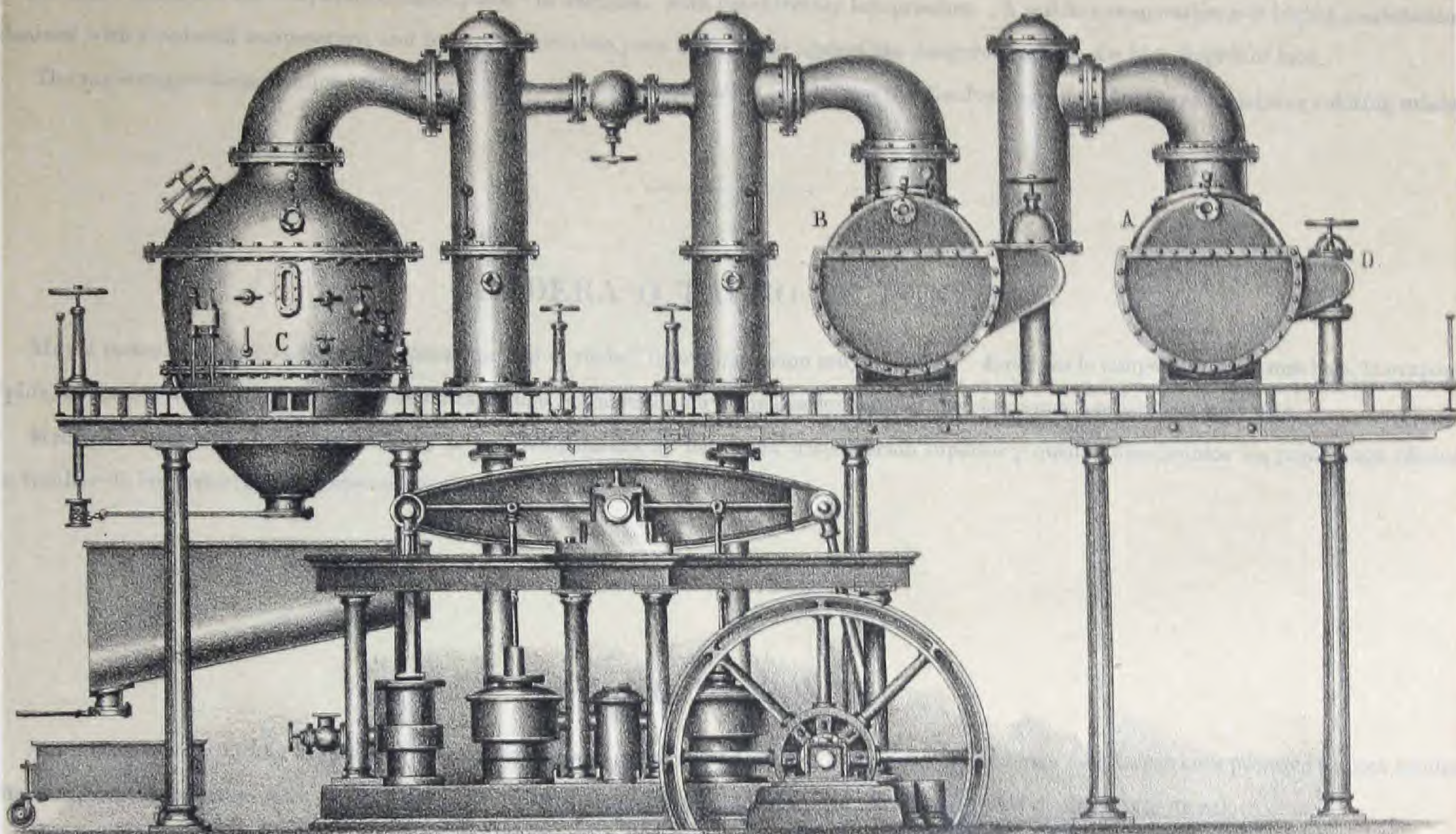
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SUGAR BOILING APPARATUS
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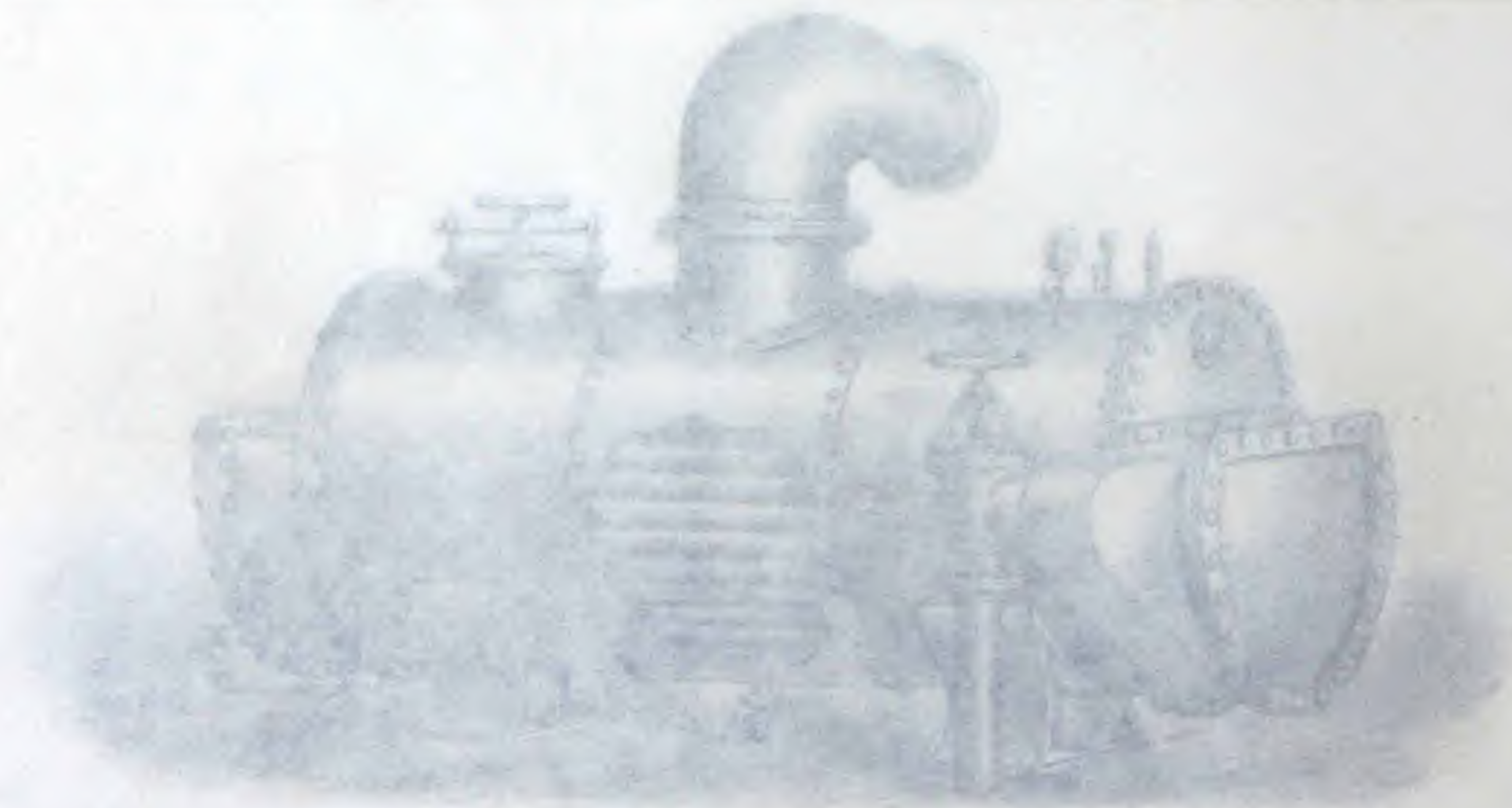
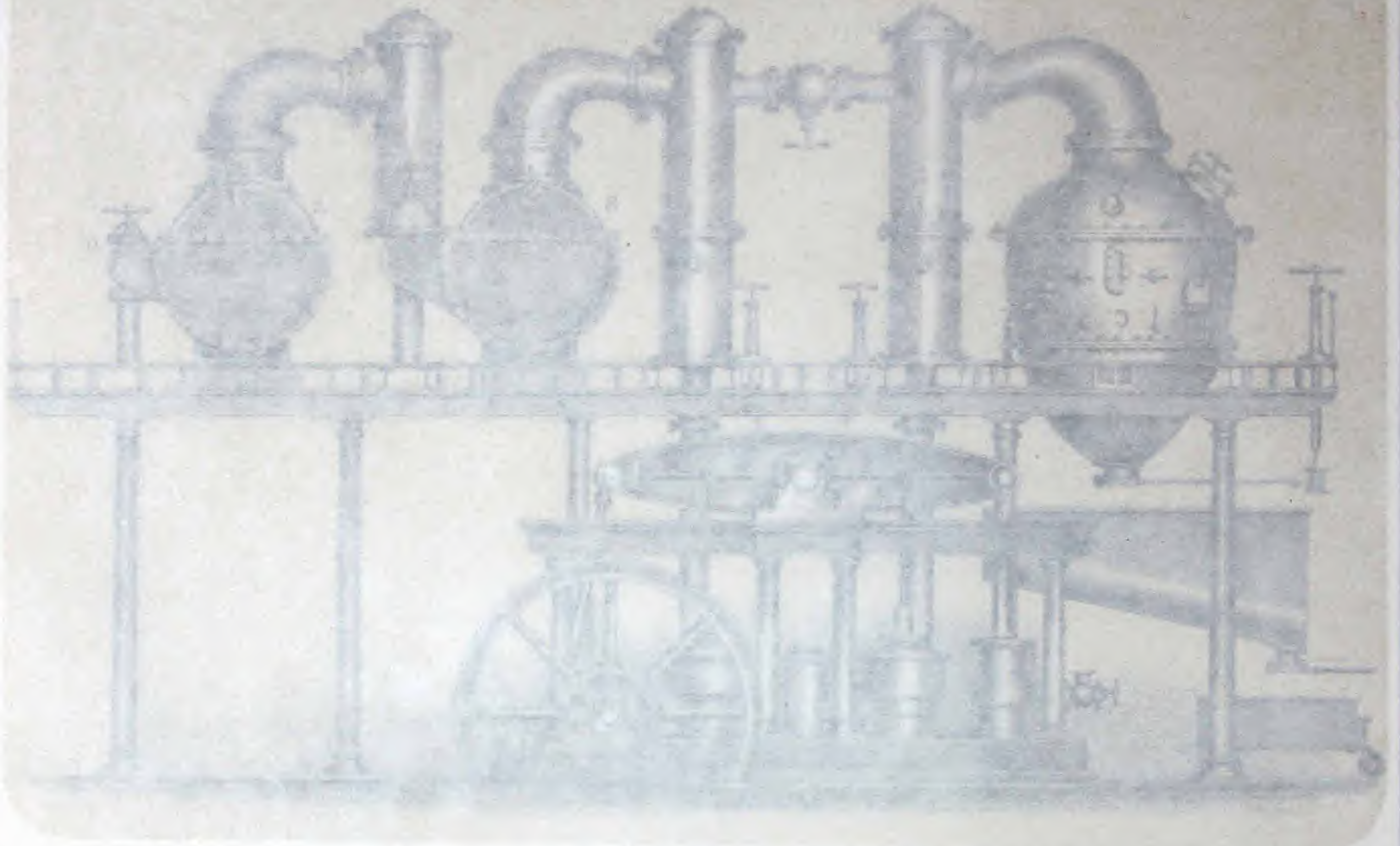
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WITH REFLEX EVAPORATORS.



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STRIKE PAN.

In many cases, the last evaporation takes place "in vacuum," with considerably less pressure. A quicker evaporation and higher condensation are thus obtained with a reduced temperature, and by those means the juice is protected against the dangerous effects of a high degree of heat.

The rapid evaporation at a low temperature gives a better crystallization and lessens the disadvantageous influence of remaining coloring substances.

CALDERA O TACHO DE PUNTO.

Muy á menudo, se hace la ultima evaporacion "en el vacío," bajo una presion muy reducida. Entónces la temperatura está mas baja, la evaporacion mas rápida, la condensacion mas completa y se halla el jugo resguardado de las malas influencias que ejerce una temperatura muy alta.

Mediante la rapidez de la evaporacion y la baja temperatura se logra una cristalizacion superior y quedan disminuidos los perniciosos efectos que podrian resultar de las materias colorantes mezcladas con el jugo.

TAXO DE PONTO.

Em muitos casos a ultima evaporação se faz no vacuo com muito menos pressão. Assim se obtem huma evaporação mais prompta e huma condesação mais alta com huma tempertura mais baixa e por estes meios o succo é protegido contra os effeitos perigosos d'altos graos de calor.

A evaporação rapida com huma temperatura baixa da melhor cristalização e diminue a influencia desvantajosa das substancias colorantes que se quedaõ.

BATTERIE OU CHAUDIERÈ A CUITE.

Dans un grand nombre de cas, la dernierè évaporation s'effectue "dans le vide," sous une pression considérablement réduite. La température est alors plus basse, l'évaporation plus rapide, la condensation plus complète, et le jus se trouve à l'abri des inconvenients qui résultent d'une température élevée.

Grâce à la rapidité de l'évaporation dans ces conditions, on obtient une cristallisation supérieure et l'on a moins à craindre les pernicioeux effets des matieres colorantes qui pourraient se trouver encore dans le jus.

STRIKE PFANNE.

Meistens findet die letzte Abdampfung im Vacuum unter vermindertem Druck statt, weil die hier zu erlangende-Verminderung der Temperatur durch rasche Verdampfung bei der gesteigerten Concentration des Saftes denselben gegen den nachtheiligen Einfluss einer hoehern Temperatur shuetzt, die rashe Verdampfung bei niedrigerer Temperatur erhaelt die Crisallisationsfaehigkeit des Zuckers und vermindert den nachtheiligen Einfluss der noch vorhandenen Verunreinigungen.

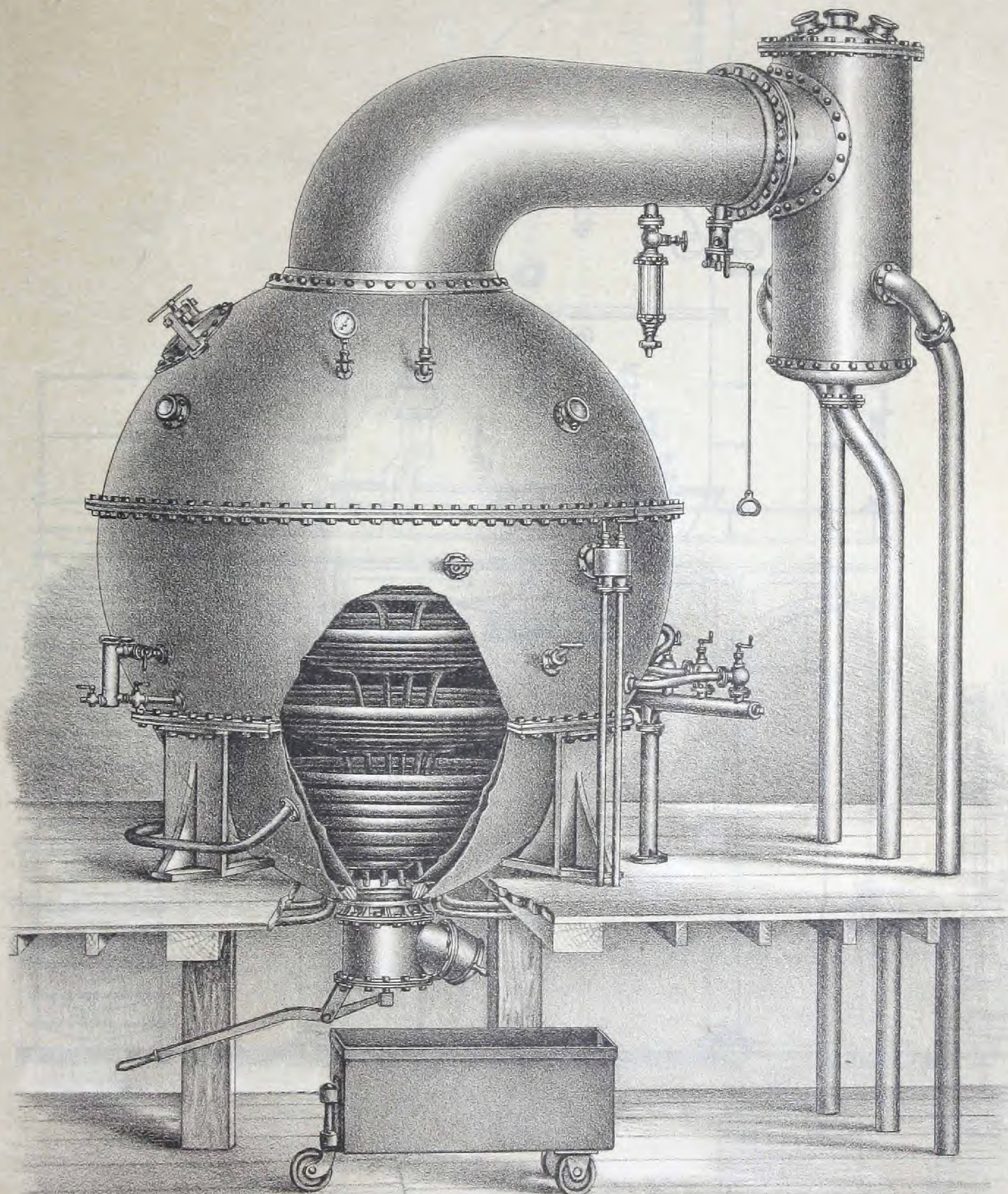
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STRIKE PAN.



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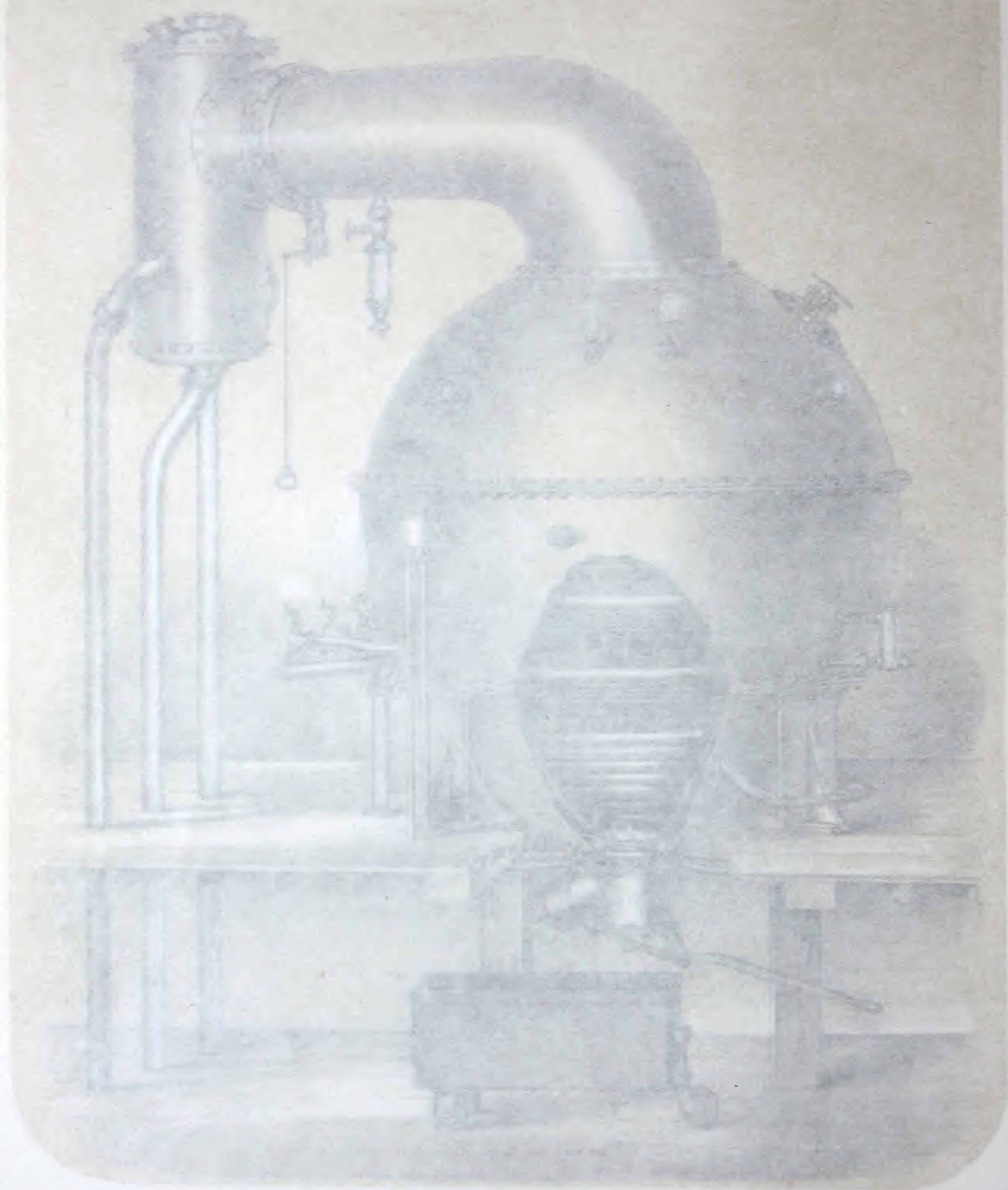
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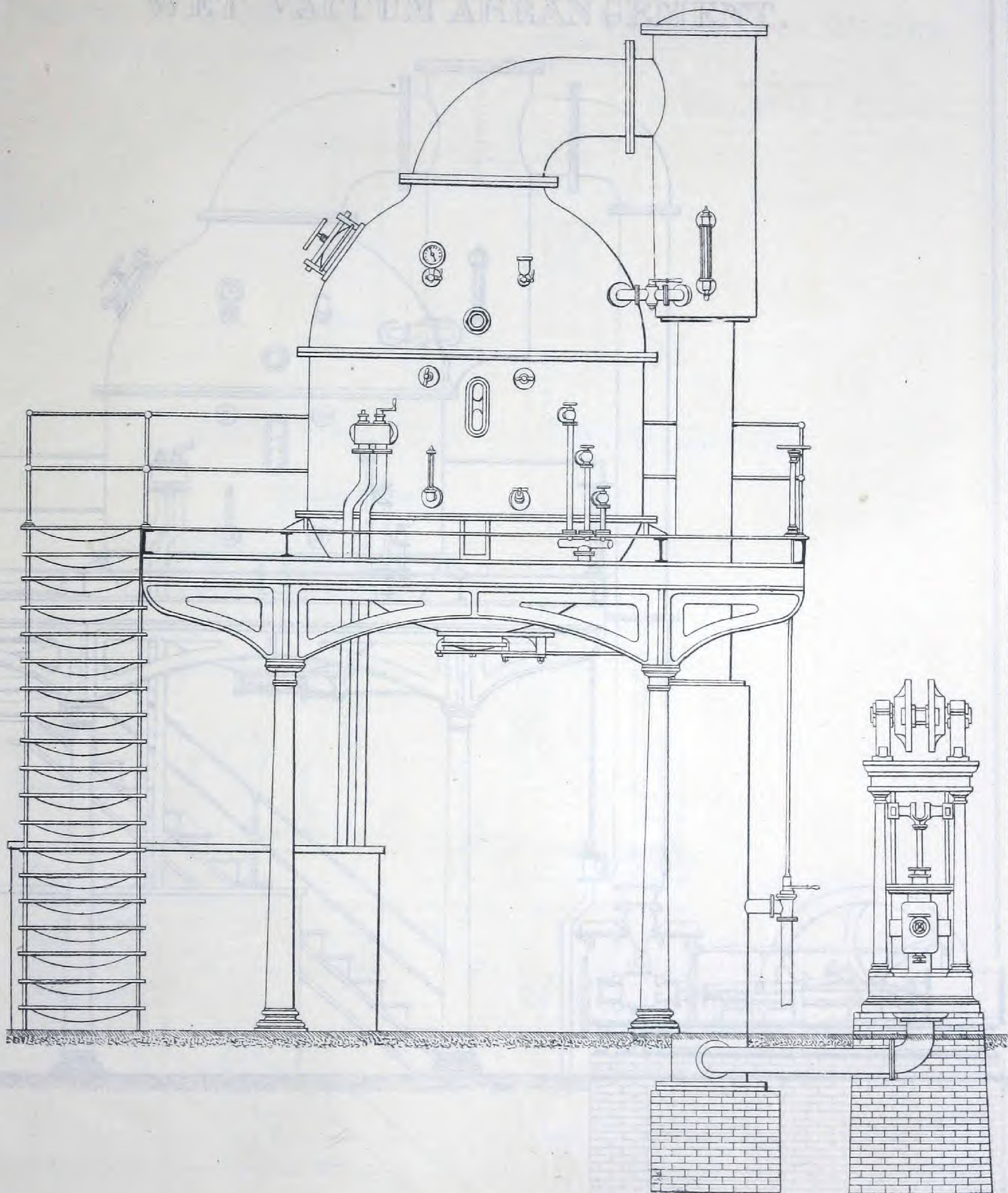
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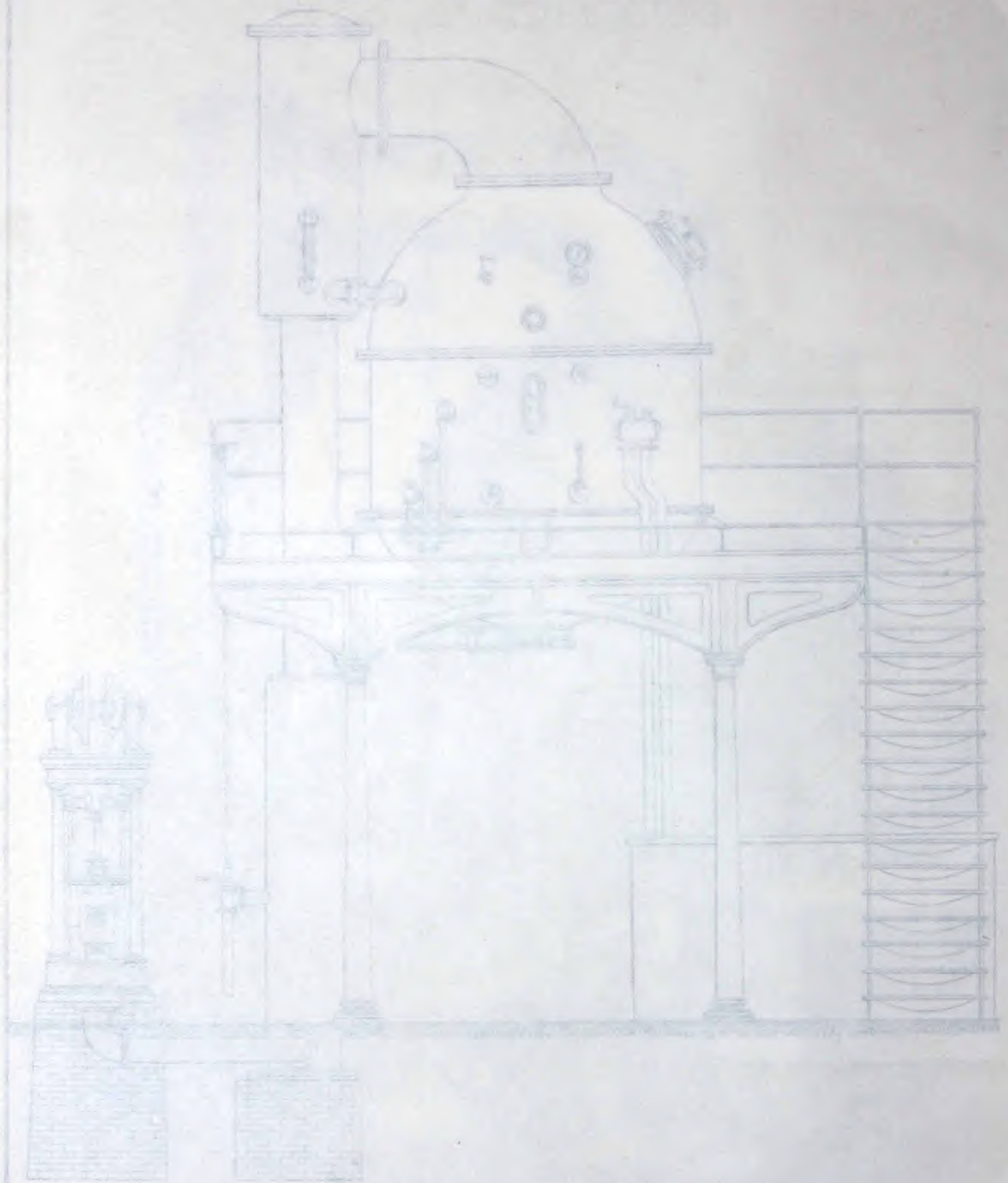
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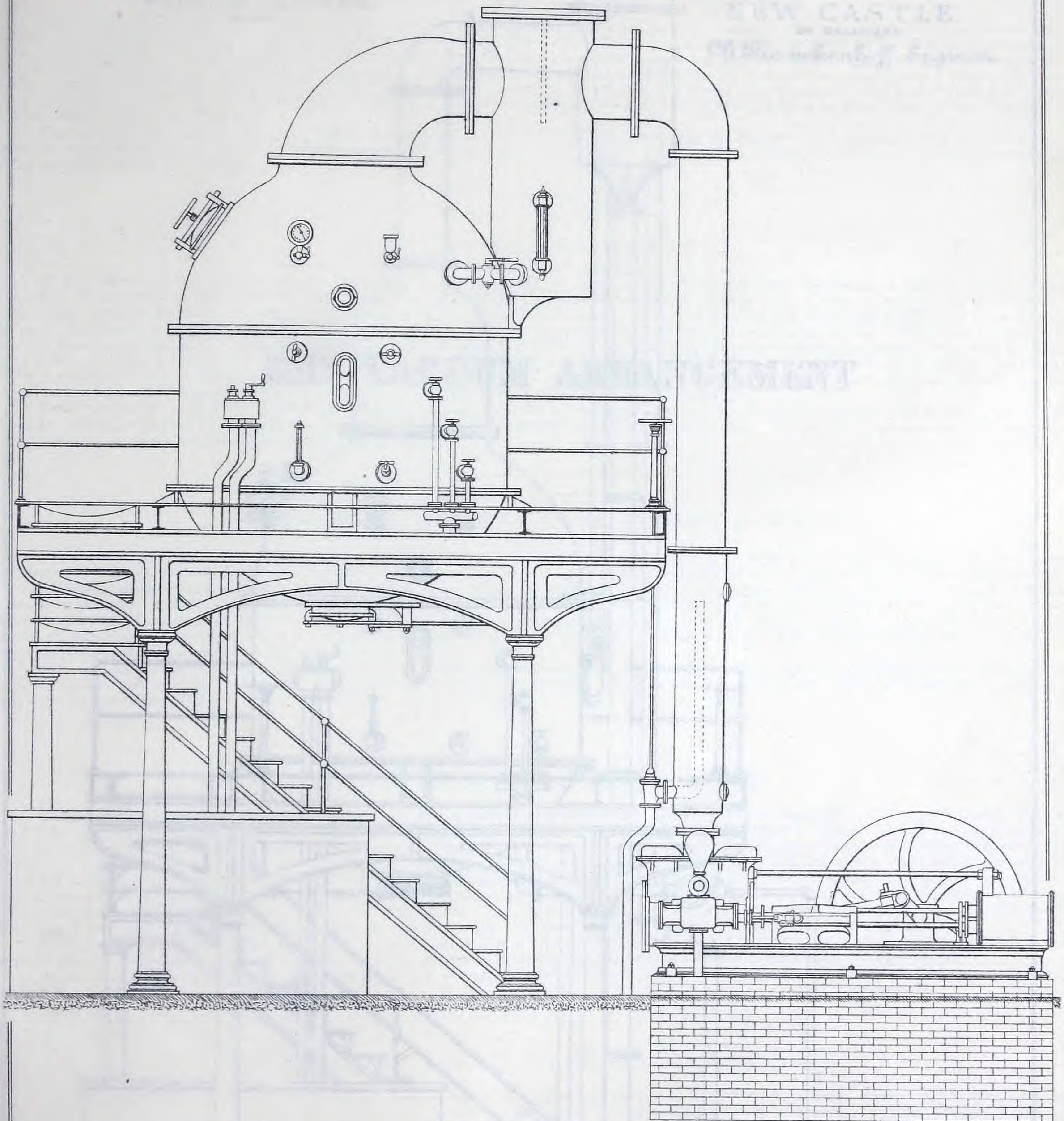
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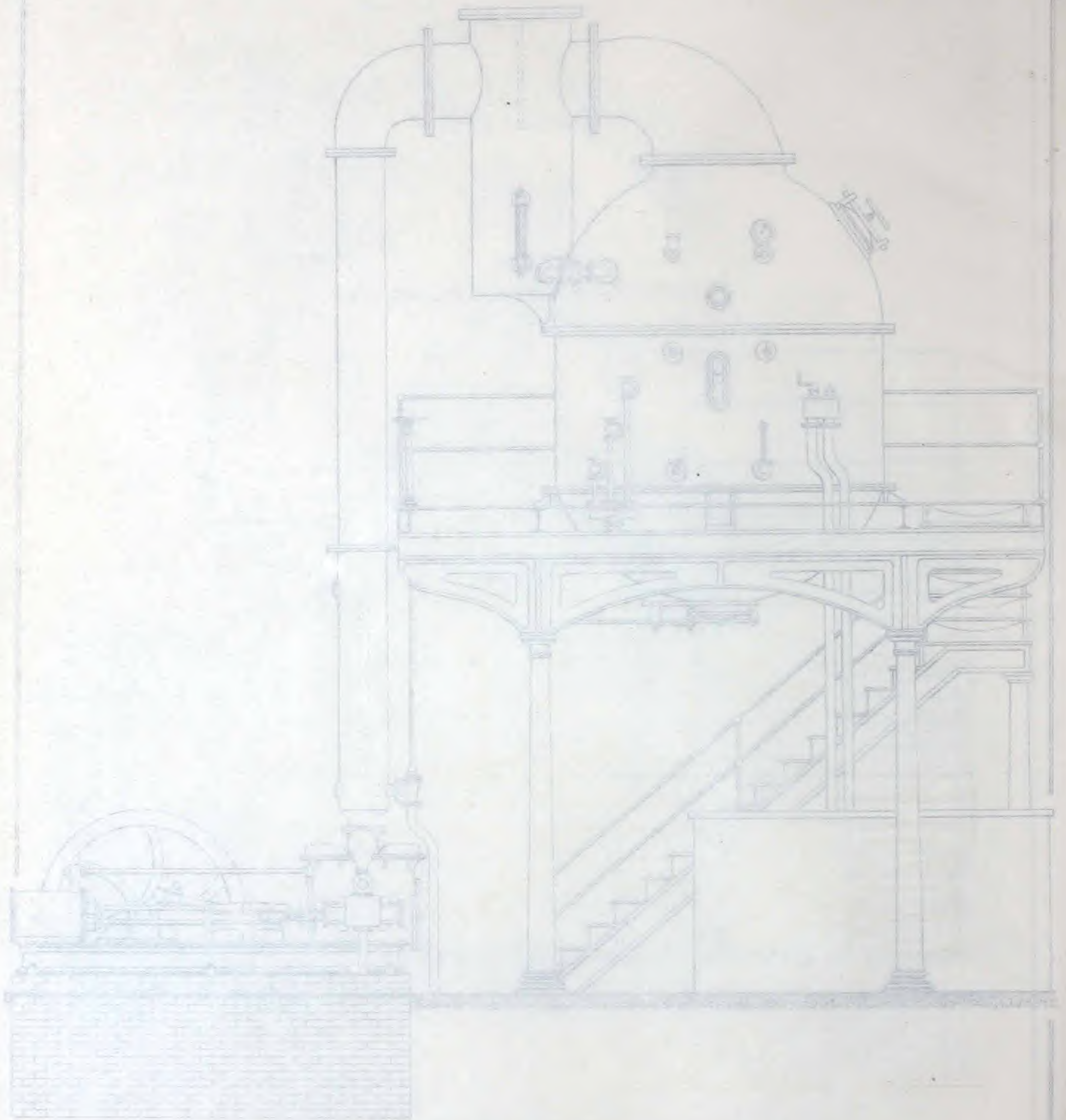
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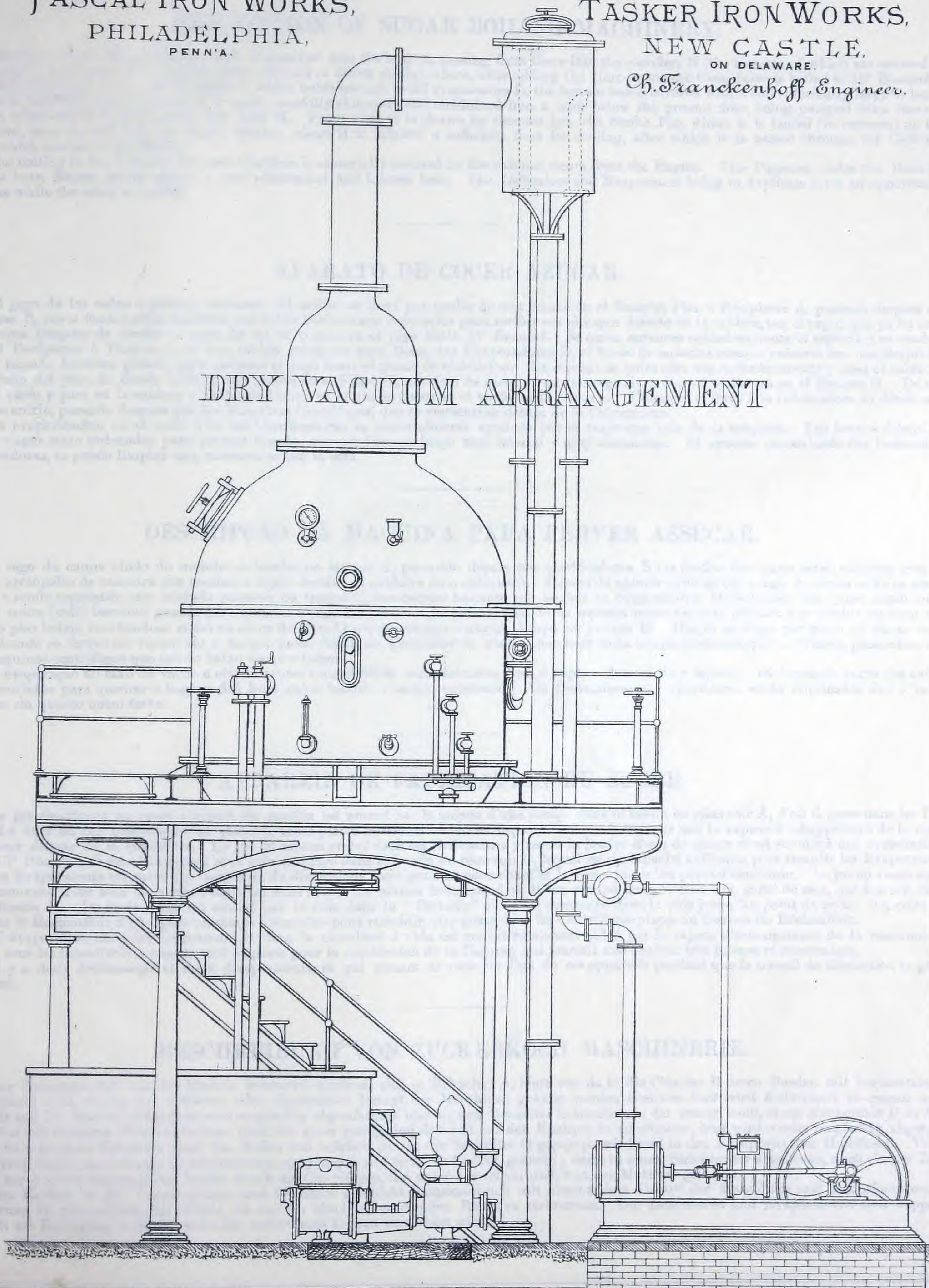
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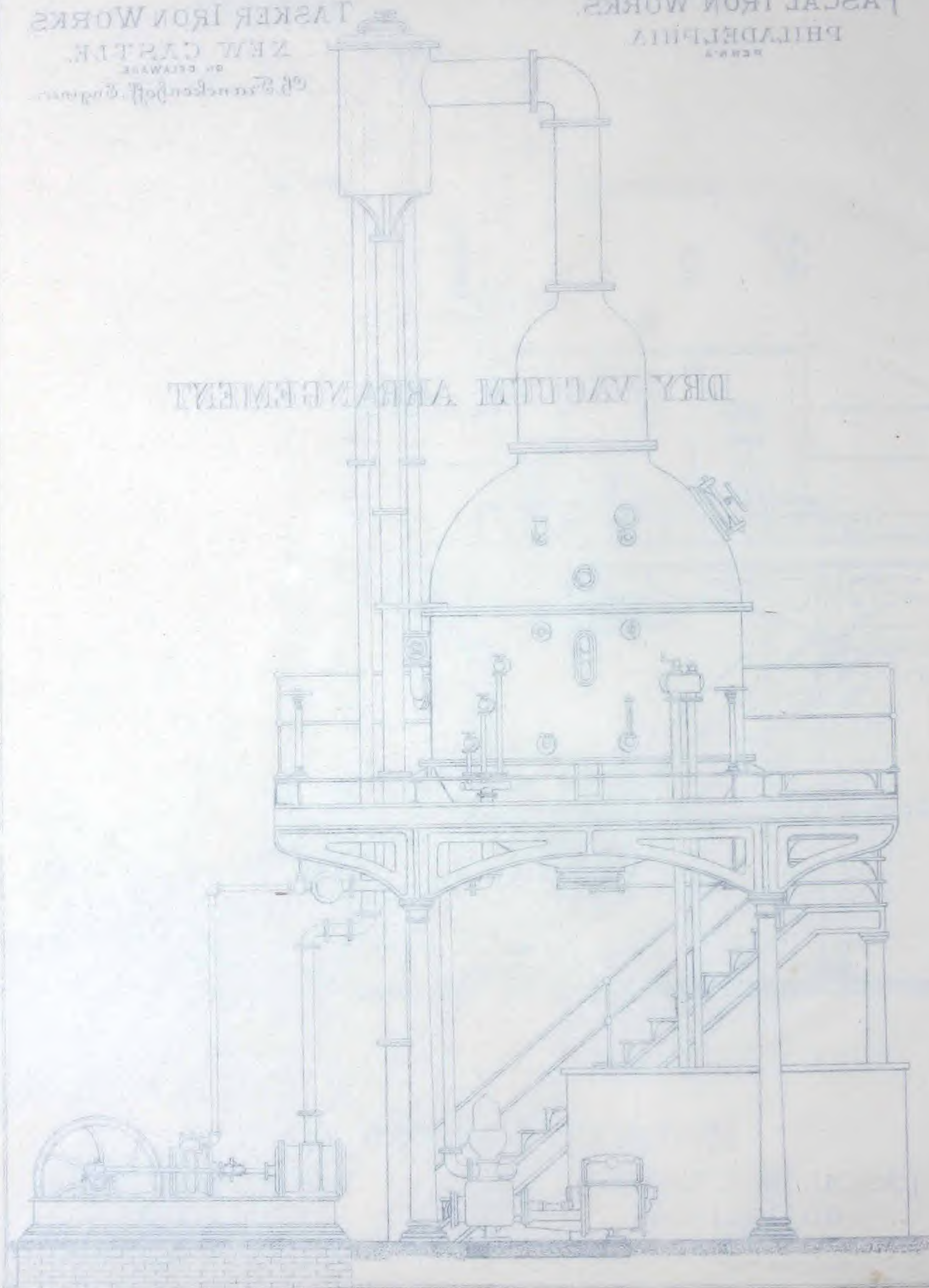
DRY VACUUM ARRANGEMENT



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DRY VACUUM ARRANGEMENT



DESCRIPTION OF SUGAR BOILING MACHINERY.

The Cane Juice coming from the mill is pumped into the tank A, passing from there into the clarifiers B (the bottoms of which are covered with horizontal pipes, so arranged as to receive either exhaust or direct steam), where, after adding the lime-water, the Cane Juice is boiled to 15° Beaumé, and being carefully skimmed, is run off into tank C, which holds enough to fill evaporators D, the bottom being covered with a coil sufficiently large to heat the Cane Juice to the boiling point, when it is again carefully skimmed and conducted into a tank below the ground floor, being pumped from there into bag-filter G, which delivers clean syrup into tank H. From here it is drawn by vacuum into the Strike Pan, where it is boiled (in vacuum) up to the striking point, then carried into the Strike Heater, where it is allowed a sufficient time for cooling, after which it is passed through the Centrifugal Machines, which are below the Heater.

The boiling in the Vacuum Pan and Clarifiers is materially assisted by the exhaust steam from the Engine. The Furnaces under the Boilers are arranged to burn Bagass, which makes a very economical and intense heat. The Defecators and Evaporators being in duplicate gives an opportunity of cleaning one while the other is boiling.

APARATO DE COCER AZÚCAR.

El jugo de las cañas ó guarapo viniendo del molino se lleva por medio de una bomba en el Tanque, Pila, ó Recipiente A, pasando despues en las Clarificadores B, cuyos fondos están cubiertos con tubos horizontales ordenados para recibir sea el vapor directo de la caldera, sea el vapor que ya ha servido en la máquina. Despues de añadir el agua de cal, se concentra el jugo hasta 15° Beaumé. Se quita entonces cuidadosamente la espuma y se conduce el caldo en el Recipiente ó Tanque C, de una cabida suficiente para llenar las Evaporadoras D, el fondo de aquellas estando cubierto con una Serpentina ó Gusano de tamaño bastante grande para calentar el jugo hasta el punto de ebullicion. La espuma se quita otra vez cuidadosamente y pasa el caldo en un Tanque debajo del piso, de donde le lleva una bomba en el Filtro G, provisto de sacos, el que entrega sirop claro ó meladura en el Tanque H. De acá, se saca por el vacío y pasa en la caldera ó Tacho de Punto, en el que se cuece en el vacío hasta el punto. Entonces se lleva a la Calentadora en donde se deja hasta que se enfríe, pasando despues por las Maquinas Centrifugas, que se encuentran debajo de la Calentadora.

La evaporizacion en el vacío y en las Clarificadoras es materialmente ayudada por el vapor que sale de la maquina. Los hornos debajo de las calderas de vapor estan ordenados para quemar Bagazo, que produce un fuego muy intenso y muy economico. El aparato conteniendo dos Defecadoras y dos Evaporadoras, se puede limpiar una, mientras se usa la otra.

DESCRIÇÃO DA MAQUINA PARA FERVER ASSUCAR.

O sugo da canna vindo do moinho se bomba no tanque A, passando depois nos clarificadores B (os fundos dos quaes estão cobertos com tubos horizontaes arranjados de maneira que recebaõ o vapor dereito da caldeira ou o exhausto). Depois de ajuntar agua de cal o sugo da canna se ferve ate a 15° de Baumé, e sendo espumado com cuidado passa-se no tanque C, que contem bastante por encher os evaporadores D, os fundos dos quaes sendo cobertos com huma cobra (coil) bastante grande para quantar o sugo a o ponto de fervidura, quando se espuma outra vez com cuidado e se conduz em hum tanque de baixo do piso baixo, bombandose entãõ no sacco de filtro G o qual entrega o xarope limpo no tanque H. D'aqui se força por meio de vacuo no taxo de ponto, ahonde se ferve (em vacuo) ate o ponto; passa depois no quentador de ponto ahonde se le da tempo necessario para enfriarse, passandose depois entre as maquinas centrifugas que saõ de baixo do quentador.

A evaporação no taxo do vacuo e clarificadores vem assistido materialmente com o vapor exhausto da maquina. Os fornos de baixo das caldeiras estando arranjados para quemar o bagaço daõ hum calor intenso e muito economico. Os Defecadores e evaporadores sendo duplicados daõ o meio de limpar hum em quanto outro ferve.

APPAREIL DE FABRICATION DU SUCRE.

Le jus de cannes ou vesou arrivant du moulin est amené par le moyen d'une pompe dans le bassin ou réservoir A, d'où il passe dans les Défécateurs B. Le fond de ces Défécateurs est garni de tubes placés horizontalement et disposés de façon à recevoir soit la vapeur d'échappement de la machine soit la vapeur directe de la chaudière. Le jus de cannes arrivé dans les Défécateurs y recoit la lessive d'eau de chaux et est soumis à une évaporation qui le porte à 15° Beaumé; il est alors écumé avec soin et dirigé dans le bassin ou réservoir C, lequel est de capacité suffisante pour remplir les Evaporateurs D. Le fond des Evaporateurs est garni d'un serpentín de dimensions assez grandes pour chauffer le vesou jusqu'au point d'ébullition. Le jus ou vesou est alors écumé de nouveau avec soin et conduit dans un réservoir à un niveau inférieur, d'où il est pompé dans le Filtre G, garni de sacs, qui fournit du sirop épuré au Bassin H. De là le sirop est amené par le vide dans la "Batterie" où il est concentré dans le vide jusqu'au point de cuite. La cuite arrive ensuite dans le Réchauffoir d'où, après un temps nécessaire pour refroidir, elle passe dans les Centrifuges placés au dessous du Réchauffoir.

L'évaporation dans les Défécateurs et dans la chaudière à vide est considérablement aidée par la vapeur d'échappement de la machine. Les fourneaux sous les chaudières à vapeur sont disposés pour la combustion de la Bagasse, qui fournit une chaleur très intense et économique.

Il y a deux Défécateurs et deux Evaporateurs, ce qui permet de nettoyer l'un de ces appareils pendant que le travail de fabrication se poursuit avec l'autre.

BESCHREIBUNG VON ZUCKERKOCH MASCHINERIE.

Der Zuckerrohrsaft von der Muehle kommend sammelt sich in Behälter A, leuft von da in die Clarifier B deren Boeden mit horizontale Heizroehren bedeckt sind, welche mit direktem oder abgehenden Dampf der Maschinen geheizt werden koennen, hier wird Kalkwasser zu gesetzt und der Rohrsaft bis auf 15° Beaumé eingedickt und sorgfaeltig abgescheumt und in den Behälter C abgelassen, der genug haelt, einen Evaporator D zu fuellen, deren Boeden mit kupferne Wuerme bedeckt sind, die gross genug sind den Saft auf den Kochpunkt zu erhalten, hier wird wieder sorgfaeltig abgescheumt und fliesst dann in einen Behälter unter den Boden von welchem aus in die Sackfilter G gepumpt wird und in den Syrupbehälter H abfliesst. Von hier wird der Syrup durch das Vacuum in die Strickpfanne gezogen und fertig zu Zucker gekocht; dann in einen Strickheater abgelassen, nach einiger Zeit, die noethig ist zur Abkuehlung wird der Zucker durch die Centrifugen, die unter demselben sind, von der Molasses getrennt.

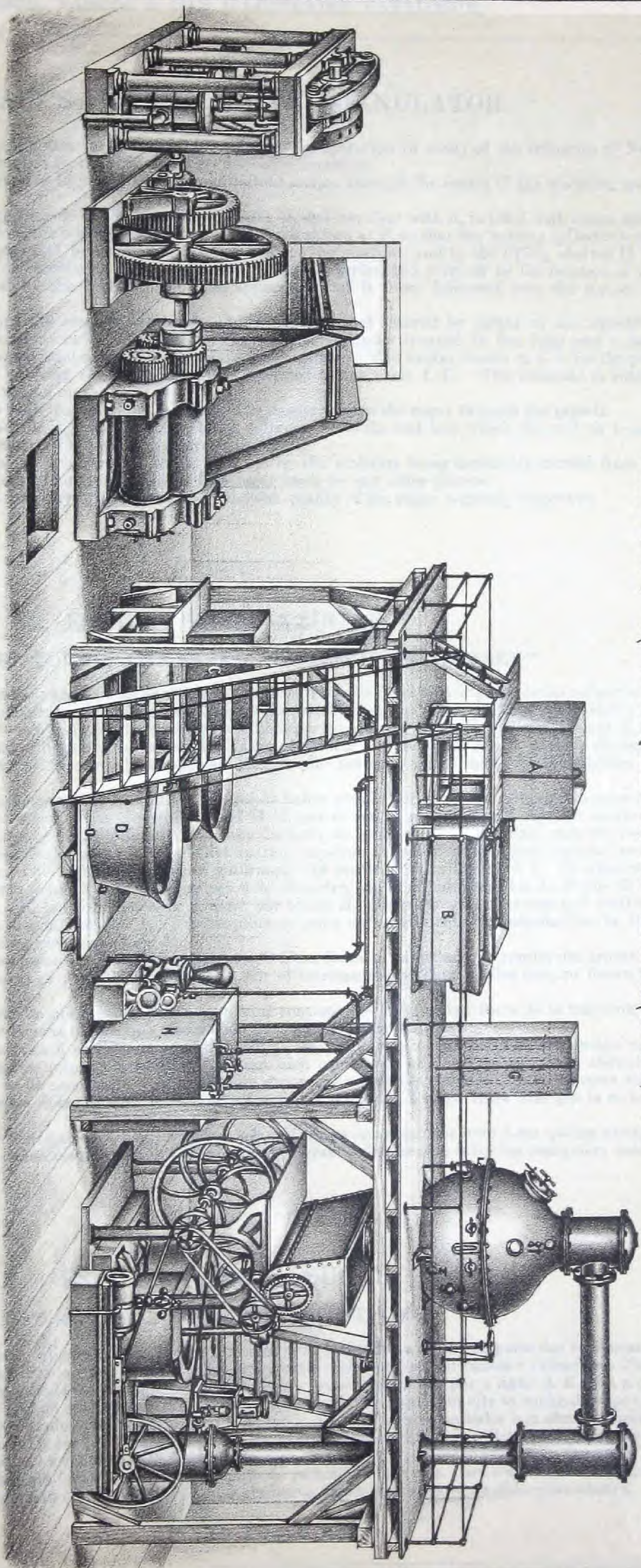
Das Kochen in der Vacuumpfanne und Clarifiers geschieht hauptsaechlich mit abgehendem Dampf der Maschinen und Dampfpumpen. Die Kesselfeuerung ist eingerichtet den Abfall, des von der Muehle kommenden Rohrs zu verbrennen. Die Defecatoren und Evaporatoren sind doppelt um Gelegenheit zur Reinigung zu geben, wenn der andere zum kochen verwendet wird.

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CCA

SUGAR BOILING APPARATUS
MILL, GEARING & ENGINE.



L. Haug Lith. Phila.

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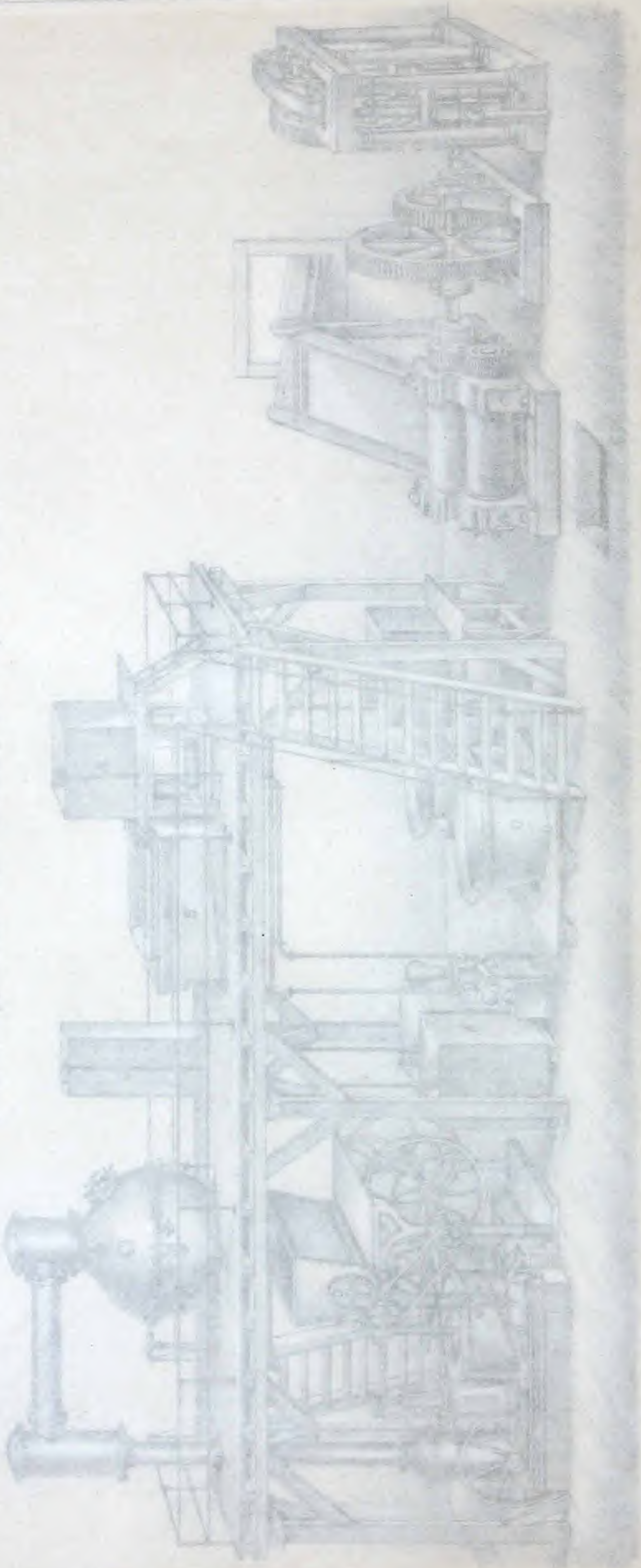
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MILL-GEARING & ENGINE

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HERSEY'S PATENT SUGAR GRANULATOR.

We desire to call your attention to our apparatus for granulating sugar, now in operation in many of the refineries of New England, New York, Pennsylvania, Peru and other sections, and pronounced by the refiners a very valuable invention.

The cuts accompanying this show an elevation in perspective, a longitudinal section through the centre of the machine, and a transverse section on line A B, seen in the longitudinal section.

The heating cylinder C, which is fastened inside of the conveyor-cylinder D, and revolves with it, is filled with steam through the pipe E in one end, and the water of condensation is delivered from the opposite end, through the pipe shown at F, so that the heating cylinder is always full of steam.

The sugar is fed into one end through a spout G, by a set of rolls placed above the machine, and by the lifting shelves H H H H, on the inside of the outer cylinder, is carried up and dropped in a continuous shower upon the heating cylinder, and rolls off by the rotation of the machine, to be again carried up, working forward to the opposite end by the inclination of the apparatus, and is there delivered into the screen, for separating into the different grades.

The heater-cylinder is put central within the conveyor-cylinder, and is adjusted and secured by means of the adjusting screws I I I I. The conveyor-cylinder is made of iron; the heater is constructed of steel plate. The conveyor-cylinder is made 23 feet long and 6 feet in diameter, with the heater-cylinder 20 feet long and 36 inches in diameter, and makes five revolutions per minute. The striker shown at K is for the purpose of passing off any sugar that may adhere to the cylinder when first entering the machine, and is operated by the cams L L. The machine is rotated by means of gear M upon the outside of conveyor-cylinder, driven by pinion on the shaft N.

The current of air constantly passing through the machine, carries off the moisture from the sugar through the pipe O.

One of the important features of the machine is, that the sugar, being delivered from the end into which the cold air is passing, is cool, so that it does not cake, and can be immediately barreled, and will not cause the barrels to shrink.

The sugar being granulated or dried, not so much from extreme heat, but by the moisture being constantly carried from the machine, is brought out clear and white, so that the sugar made from our granulator is whiter than sugar made by any other process.

The machine will granulate much more than any other before used, and the quality of the sugar is greatly improved.

ESTUFA PARA AZUCAR.

O SEA SECADOR DE AZÚCAR CON PRIVILEGIO DE "HERSEY."

Deseamos llamar la atencion sobre nuestro aparato de secar azúcar que ahora funciona en la mayor parte de las refinarias de Nueva-Inglaterra, en Nueva-York, en Cuba, etc., y se califica por los refinadores de azúcar como una de las invenciones mas útiles para los fabricantes y refinadores de azúcar.

El dibujo que acompañamos representa la máquina con un corte longitudinal por su centro y un trasversal por la linea A B vista a lo largo.

El cilindro calentador C, que se encuentra adherido al interior del cilindro conductor D y se mueve con él, se llena de vapor por medio del tubo E por una cabeza y el agua de condensacion sale por la estremidad opuesta por el tubo marcado F, de modo que el cilindro calentador está siempre lleno de vapor.

El azúcar se introduce por uno de los extremos por una canal G, despues de haber pasado por entre dos rolletes colocados cerca del orificio superior de la canal, á fin de pulverizar el azúcar. Mediante las paletas elevadoras H H H H, que se ven en el interior del cilindro exterior, es elevado y lanzado el azúcar en forma de lluvia sobre el cilindro secador, y arrojado fuera por el movimiento de rotacion de la máquina, para ser nuevamente llevado arriba caminando en direccion del otro extremo, consecuencia del plano inclinado del aparato, cayendo ahí sobre un give para separar las diferentes clases.

El cilindro secador es colocado en el centro del cilindro conductor, y afirmado por medio de tornillos I I I I. El cilindro conductor está hecho de hierro; el secador, de acero. El cilindro conductor tiene 23 pies de largo por 6 de diametro, con el cilindro secador de 20 pies de largo por 30 pulgadas de diametro, y hace cinco revoluciones por minuto. El martillo marcado K tiene por objeto el desprender todo el azúcar que pudiera adherirse al cilindro, cuando entra fresco, y esto se efectua por medio del mecanismo L. La maquina se pone en movimiento de rotacion por la rueda dentada M colocado al exterior del cilindro secador, movida por un piñon puesto en el eje N.

Una corriente de aire atravezando continuamente la máquina por el tubo O lleva fuera la humedad que resulta del azúcar.

Una de las ventajas mayores de la máquina es que, saliendo el azúcar por el extremo donde entra el aire frio, no forma bollos y puede envasarse inmediatamente sin que se recoja en el vaso.

Secándose el azúcar no tanto por el exceso de calor, como por la espulsion constante de la humedad fuera de la máquina, sale limpio y blanco, de tal modo que el azúcar secado por nuestro secador es mas blanco que otro secado por cualquier otro sistema.

Como la accion sobre el azúcar es inmediata á su entrada en el cilindro, no se pega en lo mas mínimo y por consiguiente no recibe daño ni se quema, como sucede con frecuencia con las otras máquinas; la ventilacion es tan bien combinada que el polvo no daña absolutamente. La fuerza que requiere la máquina para su marcha es menos de la de un caballo, y la presion de vapor que necesita el cilindro secador es entre veinte y treinta libras.

La maquina seca fácilmente treinta barriles ó sea treinta veces doscientas libras por hora, ó cinco veces mas que la mejor máquina en uso hasta ahora, y la calidad muy mejorada.

Reclamamos para nuestras máquinas las ventajas siguientes: que seca seis mil libras de azúcar por hora ó sea quince cajas, entrega este frio, blanco y limpio, ahora manipulacion, espacio y tiempo, da menos desperdicios y azúcar mejor granulado que otra máquina cualquiera usada hasta el dia.

ESTUFA PARA ASSUCAR.

O SECCADOR D'ASSUCAR PATENTIADO.

Desejamos chamar a attençaõ sobre o nosso apparatus para seccar o assucar que ja funciona na maior parte das refinarias da Nova Inglaterra de Nova York e nos engenhos de Cuba e desde ja qualificado como huma das invencões mais uteis para os fabricantes e refinadores d'assucar.

O desenho adjunto representa a maquina cortada longitudinalmente no centro e transversalmente por a linha A B vista a o comprido.

O cilindro quentador C que se encontra pegado no interior do cilindro conductor e que gira com elle se enche de vapor por meio do tubo E por huma cabeça e a agua da condensação sae na extremidade opposta por o tubo F de modo que o cilindro quentador seja sempre cheio de vapor.

O assucar se introduz por huma das extremidades por o canal G depois de haver passado entre dois rolletes collocados cerca do orificio superior do canal a fim de pulverizar o assucar mediante as palas elevadoras H H H H que se vêm no interior do cylindro exterior. O assucar vem levantado e lançado em forma de chuva sobre o cylindro seccador e lançado fora com hum movimento de rotaçaõ da maquina para ser de novo levantado andando na direcçaõ da outra extremidade em consequencia do plano inclinado do apparatus caindo sobre huma joeira para separar as diferentes classes.

O cylindro seccador está collocado no centro do conductor e pegado por meio dos parafusos I I I I. O cylindro conductor é de ferro e o seccador d'aço. O cylindro conductor tem 23 pes de comprido por 6 de diametro. O seccador 20 pes de comprido por 30 pollegadas de diametro e fazem cinco revoluções por minuto. O martello K faz cair o assucar que fique pegado a o cylindro quando ahinda está fresco e este se effectua por meio do mecanismo L. A maquina se pone em movimento de rotação com a roda dentada M collocada a o exterior do cylindro seccador e movida por os dentes postos no eixo N.

Huma corrente d'ar atravessando continuamente a maquina por o tubo O destrue a humidade que deixa o assucar.

Huma das maiores vantagens da maquina é que o assucar saindo da extremidade ahonde entra o ar frio não forma bolas e se pode por immediata-mente em vacilha.

O assucar se secca não tanto por excesso do calor como por a expulção constante da humidade fora da maquina, e sae limpo e branco, de tal maneira que o assucar seccado por o nosso seccador é mais branco que o seccado por qualquer outro sistema.

Como o processo sobre o assucar principia na sua entrada no cylindro, não se pega e por consequencia não recebe danmo nenhum como succede frequentemente com as outras maquinas; a ventilação e taõ bem combinada que o pó não faz absolutamente mal nenhum, a força que precisa a maquina e menos que hum cavallo e a pressão que precisa o cylindro seccador é entre 20 e 30 libras.

A maquina secca facilmente 30 barris, egual a treinta vezes 200 libras por hora ou cinco vezes mais que a melhor maquina que se usa ate agora e de qualidade superior.

As nossas maquinas possuem as seguintes vantagens. Seccaõ 6000 libras d'assucar por hora e produzem este frio branco e limpo com menos manipulação, espaço e tempo, percas menores e assucar melhor que qualquer outra maquina ate agora conhecida.

APPAREIL POUR LA DESSICATION DU SUCRE.

(BREVET DE HERSEY).

Nous désirons recommander à votre attention notre appareil pour la dessication du sucre.

Cet appareil fonctionne aujourd'hui dans un grand nombre de Raffineries de la nouvelle Angteterre, de New-York, de la Pensylvanie eto anisi que dans les sucreries des Antilles. De l'avis unanime des personnes compétentes en la matière c'est une invention de haute utilité pour les Rafineurs et les Fabricants de sucre.

La gravure qui accompagne la circulaire represente une coupe ou section longitudinale par le centre de l'appareil, et une section transversale selon la ligne designée par les lettres A, B, dans la section longitudinale.

Le cylindre C, qui est fixé dans l'intérieur du cylindre D, et le suit dans son mouvement de révolution. se remplit de vapeur au moyen du tube E adapté à l'une de ses extrémités; l'eau qui résulte de la condensation s'écoule, à l'extrémité opposée, par le tube F; le cylindre C, est ainsi toujours rempli de vapeur. Le sucre est introduit, à l'une des extrémités, par un conduit G, après avoir passé entre deux petits rôles ou cylindres placés à l'orifice du conduit G, et ayant pour objet de pulvériser le sucre.

Les palettes ou lames horizontales H H H H, sur la circonférence interne du cylindre B, saisissent le sucre au passage et le font tomber sur le cylindre C, d'où il est rejeté par le mouvement de rotation, pour être ramené de nouveau, puis rejeté encore par le même mécanisme. Il s'achemine ainsi vers l'extrémité opposée par l'effet de l'inclination de l'appareil et tombe sur un tamis qui sépare les différentes qualités.

Le cylindre à vapeur est placé au centre du cylindre extérieur et y est assuré et fixé au moyen des vis I I I I. Le cylindre extérieur est en fer, a 23 pieds de long, 6 pieds de diamètre, et fait 5 revolutions par minute. Le cylindre intérieur C, est en acier et a 20 pieds de long, et 36 pouces de diamètre.

Le mécanisme K a pour objet de détacher le sucre qui pourrait, en arrivant, adhérer au cylindre D. C'est un bras K qui est soulevé au passage par les projections L L et frappe, en retombant, sur le cylindre. Le mouvement de rotation est transmis à l'appareil par l'engrenage M, à l'extérieur du cylindre, et dans lequel s'engage le pignon situé sur l'axe N.

Un courant d'air traverse constamment l'appareil par le tube O et enlève l'humidité causée par le sucre.

Un avantage important, c'est que le sucre sortant par l'extrémité par laquelle entre le courant d'air froid, arrive au dehors dégagé de toute chaleur et peut être mis immédiatement en barrils sans craindre qu'il s'y affaisse ou qu'il s'y forme en pâte.

La granulation ou dessication s'opérant moins par l'excès de chaleur que par l'expulsion continuelle de toute humidité, le sucre est blanc et pure.

Le produit de notre appareil l'emporte en blancheur sur les résultats de tout autre procédé.

Le travail de dessication commence aussitôt après l'arrivée du sucre; on n'a donc pas à craindre qu'il adhère aux parois et qu'il s'y brule.

La force motrice nécessaire n'est que d'environ un cheval-vapeur. La pression de la vapeur dans le cylindre C est de 20 à 30 livres.

On peut aisément effectuer la dessication de trente barrils ou trente fois deux cents livres par heure, résultats cinq fois supérieurs à ceux de tout autre appareil aujourd'hui en exploitation.

HERSEY'S PATENT ZUCKER GRANULATOR.

FABRIZIERT BY MORRIS, TASKER & CO.

Wir erlauben uns auf diesen Zucker granulier Apparat aufmerksam zu machen, der jetzt in so vielen Raffinerien von New England, New York, Pensylvanien, Peru und andere Laender in Gebrauch ist und von den Raffineurs als eine werthvolle Erfindung ausgegeben wird.

Die beifolgende Zeichnung zeigt eine perspectivische Ansicht und einen Laengendurchschnitt durch die Mitte der Maschine und Querschnitt an Linie A B sichtbar im Laengendurchschnitt.

Der Heizcylinder C welcher in dem bewegenden Cylinder D befestigt ist und sich mit diesem um seine Achse dreht ist vermittelst Rohr E an einem Ende mit Dampf-gefüllt und das kondensierte Wasser am andern Ende durch das Rohr F ausgeblasen, so dass der Heizcylinder immer voll Dampf ist.

Zucker wird fortwaehrend durch Kanal G eingefuellt in welchem ein paar Rollen angebracht sind, zwischen welchen der Zucker durchgeht und dann von den Schaufeln H H H H an der innern Seite des aeußern Cylinders auf den innern Heizcylinder in bestaendiger Schauer geworfen wird und bei der Umdrehung wieder herunter faellt und zuletzt auf ein Sieb kommt um in verschiedene Groessengrade vertheilt zu werden.

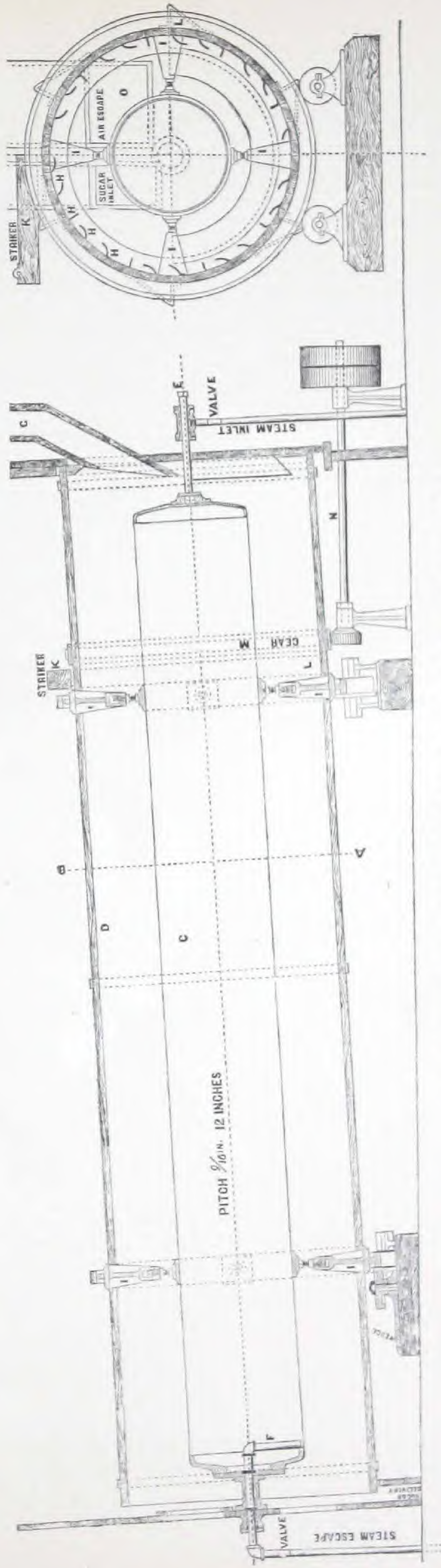
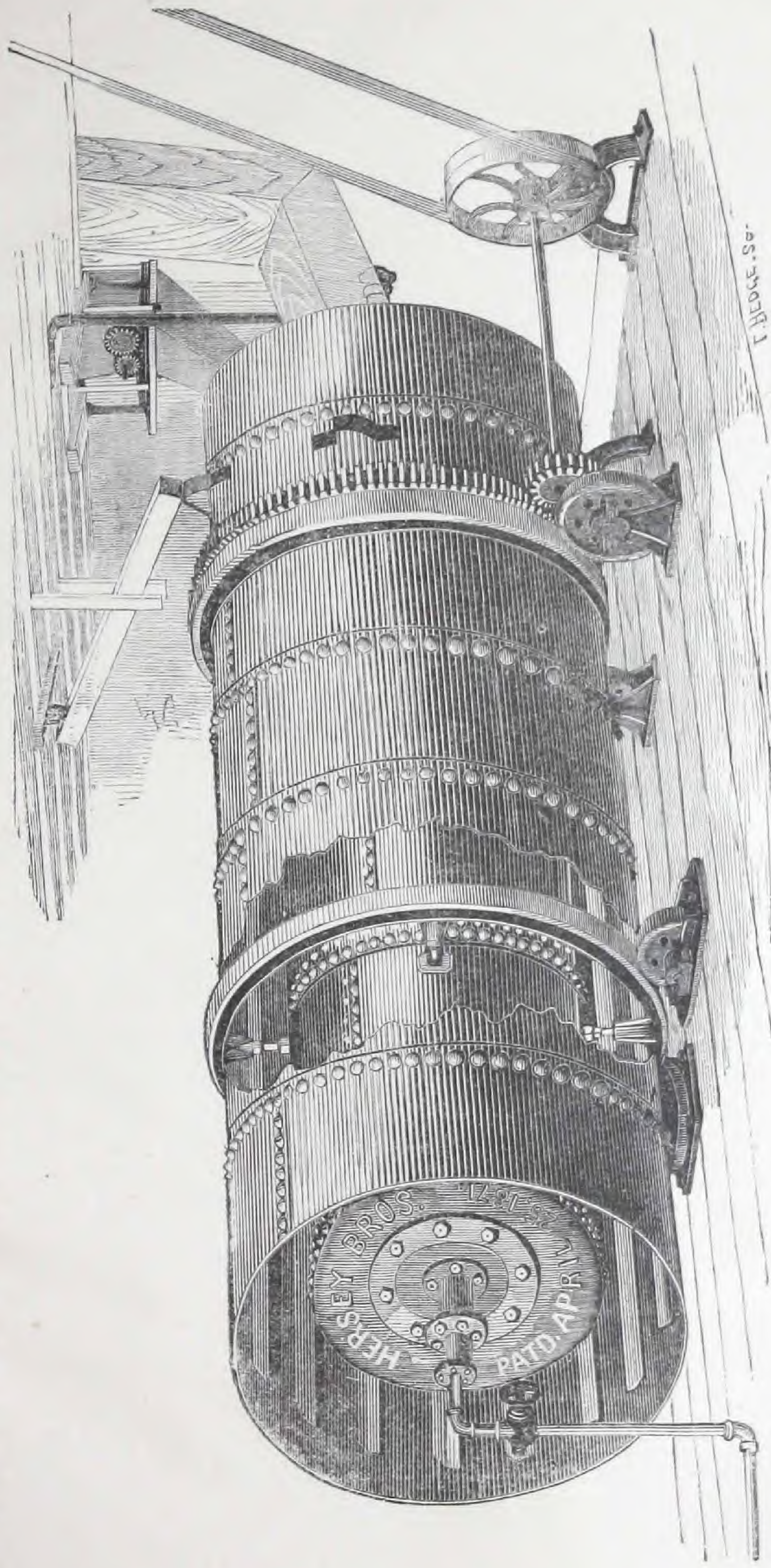
Der Heizcylinder ist central im bewegenden Cylinder angebracht und ist vermittelst verstellbaren Schrauben I I I I befestigt. Der bewegende Cylinder ist 23 Fuss lang und 6 Fuss Durchmesser, der Heizcylinder ist 20 Fuss lang und 36 Zoll Durchmesser, und macht 5 Umdrehungen per minute. Der Klopfbalken K, durch die Kaemme L L bewegt, hat den Zweck, etwa festklebenden Zucker beim Eintreten in den Cylinder durch seine Erschuetterung abzuschuettern. Die Maschine wird durch Zahnraeder M am aeußern bewegenden Cylinder und Pinion mit Shaft N herumgedreht.

Der bestaendige Luft durchzug der Maschine fuehrt die feuchte Luft durch das Rohr O ab.

Eine besondere Eigenschaft der Maschine ist dass der Zucker an der Seite heraus kommt wo die kalte Luft eintritt somit kalt ist und nicht zusammen backt und sofort in Faesser verpackt werden kann, ohne dass sich die Dauben derselben zusammenziehen. Der nicht durch grosse Hitze, sondern durch fortwaehrendes Ableiten von Feuchtigkeit, granuliert und getrocknete Zucker, kommt klarer und weisser heraus als durch eine andere Operation fabrizierte.

Diese Maschine granu'iert viel mehr als jede andere die vorher in Gebrauch war und die Qualitaet des Zuckers ist sehr verbessert.

HERSEY BROTHERS' SUGAR DRIER.



MORRIS, TASKER & CO.

PASCAL IRON WORKS:

Philadelphia, Pa.

TASKER IRON WORKS:

New Castle on Delaware.

CHARLES FRANKENHOFF, Engineer.

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DIFFUSION PROCESS

FOR THE

MANUFACTURE OF CANE SUGAR.

The Diffusion Process is founded on the principle or law of osmosis, by which two liquids of different density, separated by a membrane substance, will tend to pass through it and mingle with each other until an equality of density is established on both sides of the membrane.

The cane being cut into slices, each slice represents a porous vessel containing juice of a certain density, which during the operation is surrounded by water or juice of less strength, thus bringing the law into action and extracting the juice from the Cane. "Diffusion" deals with the closed cell and avoids the foreign and noxious elements crushed out of the lacerated cell by the roller process. Hence much less defecation is necessary.

The operation is as follows :

The Cane is cut into slices about one-eighth of an inch thick by revolving knives moved by an engine. Extractor No. 1 is then filled with cane while No. 2 is being filled and steam is let into the bottom until the whole mass is penetrated, then the steam is shut off and water let on from a tank overhead through the Heater **E** until the vessel is full, when it is tightly closed. No. 2 being filled with chips and duly steamed, water is let down from the tank through the Heater into No. 1, driving the liquid by hydrostatic pressure out of No. 1 into No. 2, through the connecting pipe which has in the mean time been opened. No. 3 is filled, steamed and charged with juice as above. When No. 4 is filled with chips and water is let directly from the tank into No. 1, driving the juice which was in it through the Heater into No. 2, and from 2 to 3 and 3 to 4. Cold water into No. 1, and from No. 1 to 2, from No. 2 through the heater into No. 3, then directly into 4 and 5, and so on, care being taken to preserve the temperature of the last vessels filled at about 190° or 200° Fahrenheit. When the hot juice has passed through No. 7, it is sufficiently concentrated and discharged into the sugar house for subsequent treatment. No. 1 is now emptied, and No. 2 becomes the first vessel in the battery and the work goes on as before, there being always seven vessels working, one being emptied and two being refilled, so that practically, when the work is in full operation, as fast as one vessel is filled, a charge of concentrated juice goes into the sugar house, and one vessel with exhausted cane is emptied.

It is well to begin with hot water or juice to accelerate the process, but the subsequent diffusion may be made with cold juices.

Fig. 1, of sketch is a side elevation of a battery of ten Extractors with pipes and heaters.

Fig. 2, plan of Extractors and Pipes.

Fig. 3, Transverse section.

A. A. etc., represents a single battery of extractors, arranged in two rows. **B** is a trough for conveying the thick juice from the extractors to the sugar house for subsequent treatment. **C**, a trough for carrying off the wash water. **D. D.** are pipes connecting the bottom of the extractors with an overhead cold water reservoir, and a heater **E**, in such a way that it can be run directly to the extractors, or through the said heater when hot water is required. **F** is a pipe carrying thick juice from the extractors to the trough or canal **B**. **G** is a heater for heating the juice in case the latter is not of the proper temperature for the next vessel. **H** and **I** are pipes leading to and from the said heater, and connecting the extractors at the bottom through the pipes **D/D'**, the inlet communication to heater being controlled by a valve *b* on the pipe **H**, and the outlet by a valve *c* on the pipe **J**.

A steam pipe *d* communicates with the bottom of vessel through the pipe **D'**, and on the latter are valves **K** for waste from the bottom of the vessels into either the troughs **B** or **C**. The pipes and valves, as will be seen by referring to the drawing, are so arranged that the water or steam can be run in at the bottom of one extractor, and from the top of the same to the bottom of the next extractor, or through the heater to the next, when it is not of the required temperature, no stop being necessary; the juice also, after it has passed through the requisite number of vessels, can be run off to the trough from any one of the vessels. Thus the operation may be carried on continually and in succession, in all the diffusion stages, without interference for one with another, the water flowing from the reservoir through pipe **D** into and through Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9 into 9 at the bottom, while the thick juice from No. 10 is escaping into the trough **B**.

Or one or more of the Extractors may be cut off for filling, and for matters to remain at rest while the others are in connection for progressive operations.

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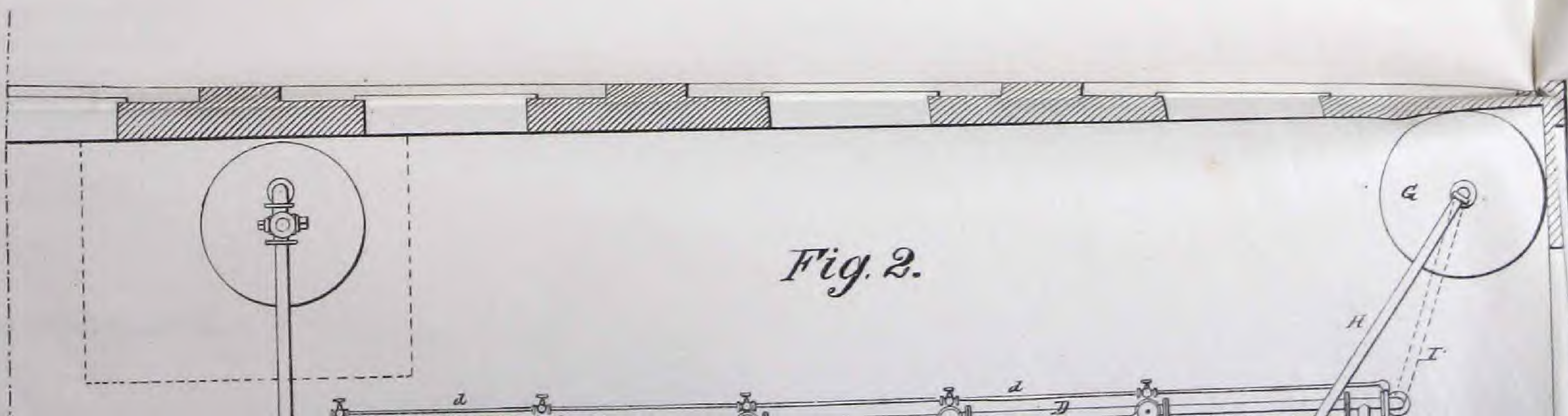
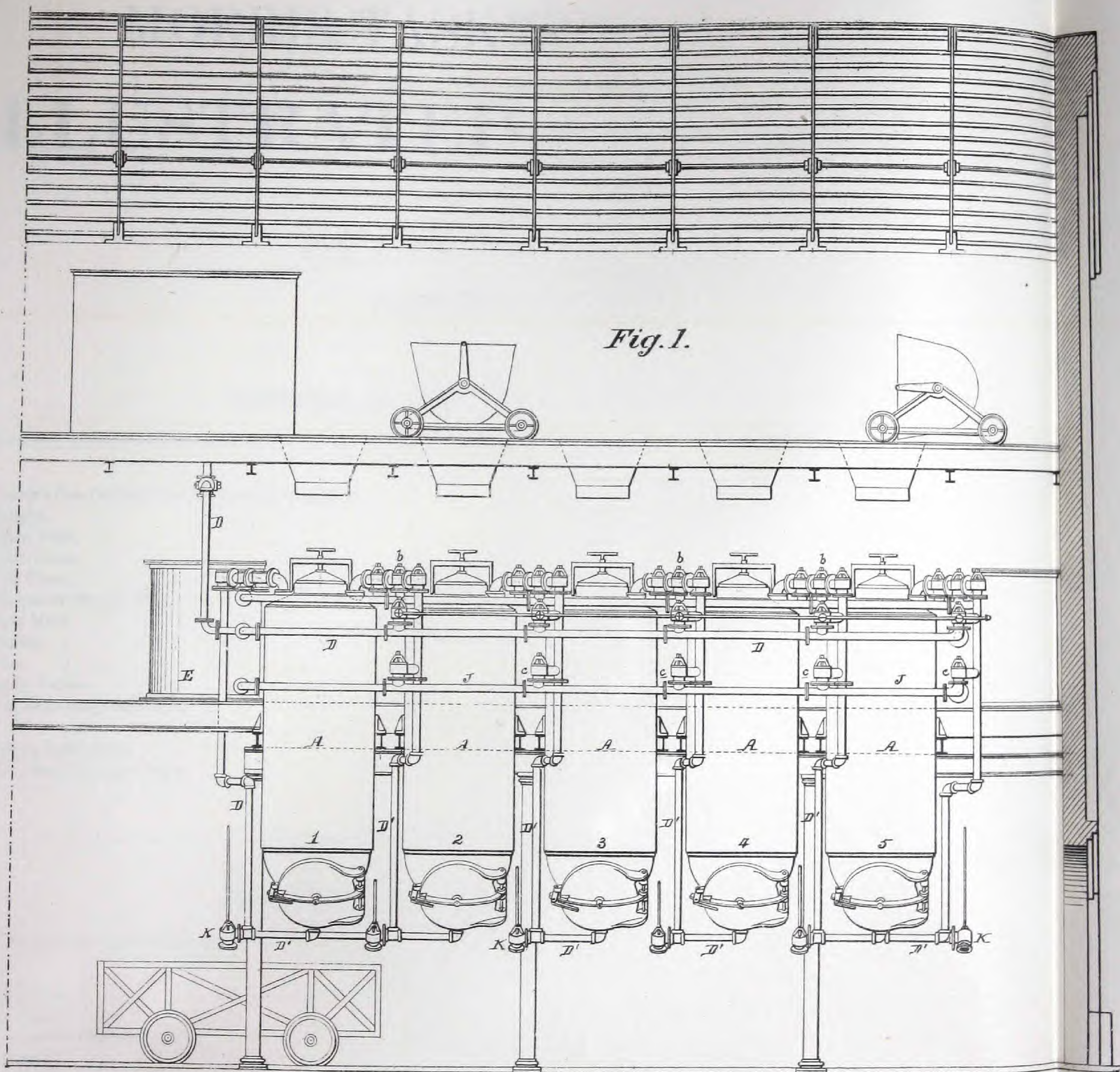
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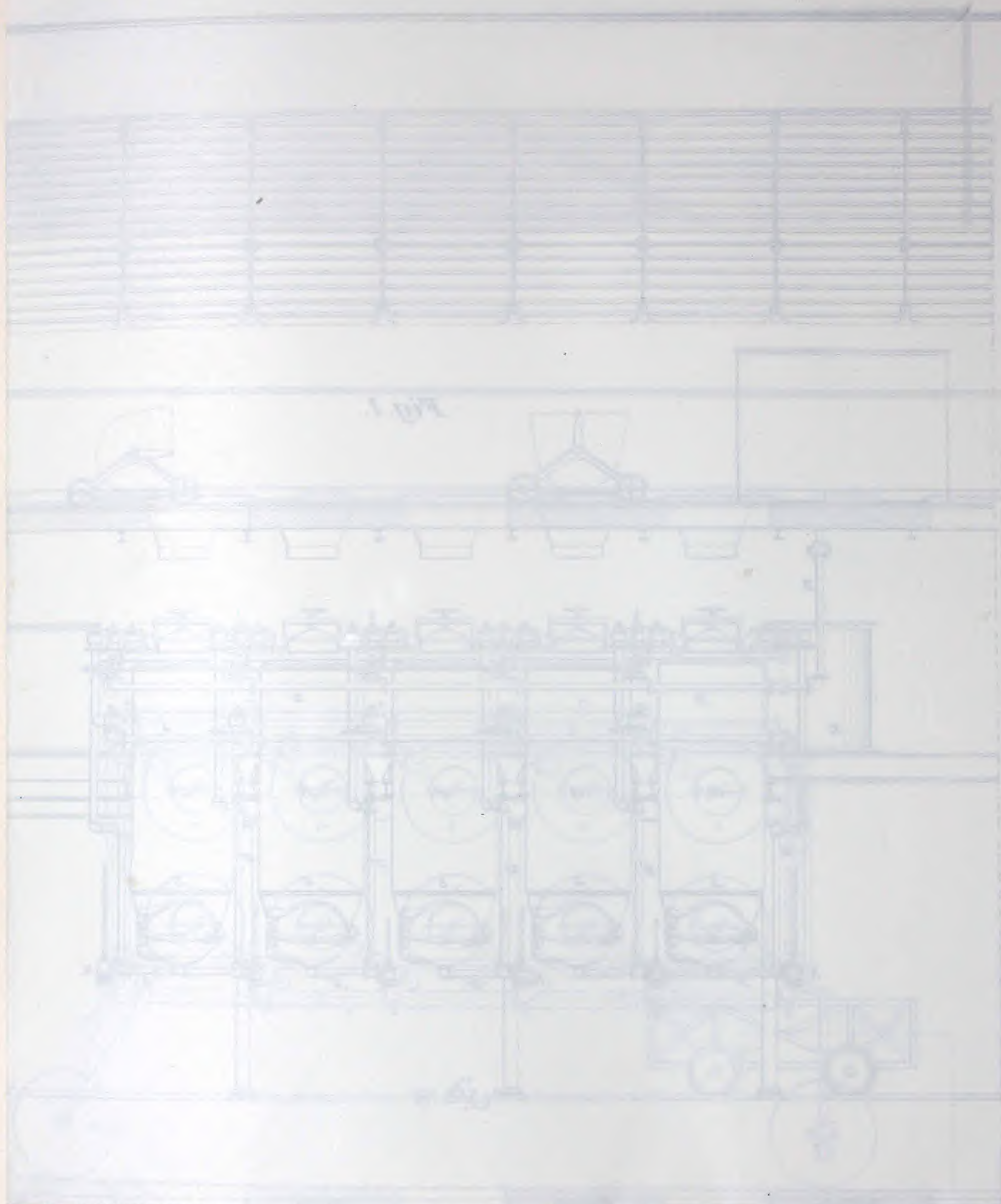
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PRICE LIST

FOR

MORRIS, TASKER & CO., LIMITED,

ILLUSTRATED CATALOGUE.

CLASS TWELFTH.

FIRST EDITION, 1877.

CASTINGS, &c. FOR SIEMEN'S GAS-PRODUCER.

No.	PLATE.		PRICE.	No.	PLATE.		PRICE.
	1	Siemen's Gas Producer and Parts shown in position,		14	2		
1	2	Hopper,		15			
2		Poker Plate,		16	}	Binders,	
3		Floor Plates,		17	}		
4		Fire Plates,		22	3		
5		Damper for Supply Flue,		23			
6		Sight Hole,		24			
7		Bracket,		25			
8		Door,		26			
9		Safety Valve,		26 ^a	}	Stoker Tools,	
10		Man Hole Ring and Cover,		27			
11		" " " " " " " " " " " " " " " "		28			
12		Taking down plates,		29			
13		Man Hole Plate and Cover,		30			
				31	}		
				32		Grate Bar,	
				33		False Grate Bar,	

CASTINGS, &c. FOR SIEMEN'S GAS FURNACE.

No. PLATE.		PRICE.	No. PLATE.		PRICE.
18	3	Wall Box,	43	Beam for Floor,	
19		Gas Box,	44	} Floor Plates,	
20		Damper for Chimney Flue,	45		
21		Roller,	46		
34		Keystone,	50		
35		Floor Column,	51		
36		Draft Damper Column,	52		
37		Air or Gas Valve Column,	47	Truss Bracket,	
38		Roller Plate,	48	Chain Wheel,	
39		Regulating Damper,	49	Tie Rod Bracket,	
40	4	Bed Plate for Furnace,	53	Damper for cut-off,	
41		Fore Plate,	54	} Tie Rods,	
42		Corner Binder,	55		

CLASS TWELFTH.—*Continued.*

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No. PLATE.		PRICE.	No. PLATE.		PRICE.
1	5 Rotary Shears,		9	Rack,	
2	Adjustable Rotary Slitting Shears,		10	{ Coupling,	
3	{ Cone Pulleys,		11	{ "	
4			12	{ Pedestal,	
5			13	{ "	
6	6 Pulleys,		14	{ Hangers,	
7	Spur Wheel,		15	{ Portable Angle Countershaft,	
8	Bevil or Mitre Wheel,		16		

LIST OF PATTERNS OF GEAR WHEELS, PULLEYS, PEDESTALS, &c.

SPUR WHEELS.

$\frac{3''}{8}$ PITCH.						$\frac{3''}{4}$ PITCH.					
NO. OF PATTERN.	DIAM-ETER.	COGS.	FACE.	PRICE.	REMARKS.	NO. OF PATTERN.	DIAM-ETER.	COGS.	FACE.	PRICE.	REMARKS.
	Inches.		Inches.				Inches.		Inches.		
	$1\frac{3}{4}$	15	$1\frac{1}{4}$		Internal.	95	$3\frac{1}{2}$ f.	16	$1\frac{3}{8}$		
	$4\frac{1}{4}$	36	$1\frac{1}{4}$		"	100	$3\frac{9}{16}$ f.	15	$2\frac{1}{8}$		
136	$2\frac{3}{8}$	20	$1\frac{3}{16}$			102	$3\frac{3}{8}$ f.	15	2		
165	$3\frac{5}{8}$	29	$1\frac{1}{4}$			94	$3\frac{1}{4}$	14	$1\frac{7}{8}$		
						121	$12\frac{7}{8}$	52	1		Iron.
						144	$2\frac{7}{8}$	12	$1\frac{3}{8}$		
$\frac{5''}{8}$ PITCH.						$\frac{7''}{8}$ PITCH.					
160	$19\frac{7}{8}$	100	$1\frac{5}{8}$		Iron.	87	$4\frac{3}{8}$	17	$2\frac{3}{8}$		
159	$9\frac{1}{2}$	50	$1\frac{5}{8}$		"	142	$23\frac{1}{4}$	84	$2\frac{1}{2}$		
127	$11\frac{2}{3}$	60	$1\frac{1}{4}$			96	6	22	$2\frac{1}{2}$		
137	$4\frac{1}{2}$	22	$1\frac{1}{4}$			103	$3\frac{1}{2}$	12	3		
162	$3\frac{3}{4}$	15	$1\frac{1}{2}$			123	10	36	3		Iron.
$\frac{1''}{2}$ PITCH.						$1''$ PITCH.					
79	$7\frac{5}{8}$	48	$1\frac{1}{4}$		Iron.	169	$6\frac{5}{8}$	21	$2\frac{1}{2}$		
158	$3\frac{1}{8}$	21	$\frac{3}{4}$			168	$20\frac{5}{8}$	65	$2\frac{1}{2}$		
105	$7\frac{2}{3}$	48	$1\frac{1}{4}$			106	$7\frac{7}{8}$	25	$2\frac{1}{2}$		
107	$3\frac{1}{2}$	22	$1\frac{1}{4}$			108	$9\frac{1}{4}$	30	$2\frac{1}{2}$		
47	$5\frac{1}{3}$	34	$1\frac{1}{4}$			128	$14\frac{5}{8}$	46	2		
161	$2\frac{1}{2}$ f.	17	$1\frac{1}{4}$			101	$3\frac{7}{8}$	12	$2\frac{1}{4}$		
75	$7\frac{5}{8}$	48	$1\frac{1}{2}$			150	$32\frac{3}{4}$	104	$1\frac{7}{8}$		
97	$3\frac{1}{2}$	22	1			106	$7\frac{3}{8}$	25	$1\frac{1}{2}$		
117	$3\frac{5}{8}$	23	1			13	$38\frac{7}{2}$ f.	120	$2\frac{1}{2}$		
164	$2\frac{3}{4}$	18	$1\frac{1}{4}$			15	$4\frac{7}{8}$	15	$2\frac{1}{2}$		
166	$7\frac{1}{2}$	47	$1\frac{3}{4}$			154	$47\frac{3}{4}$	150	$1\frac{1}{2}$		
167	$2\frac{1}{2}$	16	$1\frac{3}{4}$								
					Round Teeth.						
					" "						

CLASS TWELFTH.—*Continued.*

LIST OF PATTERNS OF GEAR WHEELS, PULLEYS, PEDESTALS, &c.

SPUR WHEELS.

1" PITCH.						1½" PITCH.					
No. OF PATTERN.	DIAM-ETER.	COGS.	FACE.	PRICE.	REMARKS.	No. OF PATTERN.	DIAM-ETER.	COGS.	FACE.	PRICE.	REMARKS.
	Inches.		Inches.				Inches.		Inches.		
157	33 $\frac{7}{16}$ f.	105	2½			117	6 $\frac{5}{8}$	14	4		
12	30 $\frac{9}{16}$ f.	96	2½			61	16 $\frac{5}{8}$	35	3		
14	3 $\frac{7}{8}$	12	2½			133	11½	24	3		
22	7 $\frac{5}{8}$	24	4			118	6 $\frac{3}{4}$	14	5		
20	9	28	4			130	11 $\frac{3}{8}$	24	4		
21	15½	48	4			93	4 $\frac{3}{4}$	10	3½		
149	5 $\frac{1}{10}$	16	3			44	32	67	3		
145	20 $\frac{2}{5}$	64	3			53	24 $\frac{3}{8}$	51	3		
147	22 $\frac{9}{10}$	72	3			58	25 $\frac{1}{8}$	53	4		
146	26 $\frac{1}{5}$	82	3			116	10	21	4		
11	23 $\frac{7}{8}$	75	2½			132	12	25	5		
19	9	28	2			43	31	65	3		
23	7 $\frac{5}{8}$	24	2			33	40½	84	4		
82	12 $\frac{5}{8}$	40	1½			55	26 $\frac{5}{8}$	56	3½		
89	3 $\frac{7}{8}$	12	1 $\frac{5}{8}$			37	25 $\frac{5}{16}$	53	4		
92	6 $\frac{3}{8}$	20	2			90	7 $\frac{5}{32}$ f.	15	4		
78	24	76	3½			155	14 $\frac{1}{16}$ f.	31	4		
148	15½	48	3			35	28 $\frac{3}{16}$ f.	59	4		
151	24	76	2		Iron.	51	23 $\frac{7}{8}$	50	4		
152	6	19	2		"	156	17 $\frac{1}{16}$ s.	37	4		
153	4 $\frac{3}{16}$	13	2			88	6 $\frac{6}{10}$	14	4		
1½" PITCH.						10	46	96	3		
27	27 $\frac{1}{16}$	78	3			16	5 $\frac{1}{16}$	12	3		
112	6 $\frac{7}{16}$ f.	18	3½			84	25 $\frac{1}{8}$	53	5½		
110	7½	20	3			129	8½	18	3½		
74	6 $\frac{3}{32}$ s.	17	4			60	21	33	3		1½" Pitch
52	24 $\frac{3}{8}$	67	4			141	7½	15	4		
79	3½	10	2½			67	7½	15	4½		
1¼" PITCH.						3" PITCH.					
126	13 $\frac{3}{4}$	36	2½			62	21½	38	3½		
122	13½	34	2½		Iron.	98	6 $\frac{1}{8}$	11	3½		
138	9½	25	9			81	17½	32	3		Round Teeth.
170	5½	13	5½			38	23 $\frac{3}{8}$	42	3½		
3" PITCH.						111	9 $\frac{3}{8}$	17	4		
45	39	89	3			113	8 $\frac{1}{2}$ f.	15	3½		
71	11 $\frac{3}{4}$	27	3			63	21½	38	3½		Round Teeth.
72	7	16	3								
57	10½	24	4								
73	4 $\frac{1}{16}$ f.	11	4								
114	9½	22	3								
70	13	30	3								

CLASS TWELFTH.—*Continued.*

LIST OF PATTERNS OF GEAR WHEELS, PULLEYS, PEDESTALS, &c.

SPUR WHEELS.

2" PITCH.						2½" PITCH.					
NO. OF PATTERN.	DIAM-ETER.	COGS.	FACE.	PRICE.	REMARKS.	NO. OF PATTERN.	DIAM-ETER.	COGS.	FACE.	PRICE.	REMARKS.
	Inches.		Inches.				Inches.		Inches.		
65	16⅜	25	6			39	25⅝	32	8		
104	10⅞	17	6			85	60⅞ f.	76	7		
17	7¾	12	4			51	25⅝	32	8		
18	9¾	15	4			136	9½ f.	12	6		
66	18¼	28	6			40	32¼	40	6		
91	7	11	8½			50	22	27	6		
120	9¼	14	5			26	30	37	8		
131	12¾	20	6			115	7⅝ s.	10	6⅝		
125	12½	19	4¼			8	29½	36	6		
54	21¾	34	4			40	32¼	40	7		
119	11⅝	17	4			49	22	27	8		
124	13¼	21	4			135	35½	45	8		
140	14½	23	4			2¾" PITCH.					
77	33	52	4			134	10¾	12	5½		2⅝" Pitch.
34	29¼	46	4			3" PITCH.					
48	21¾	34	6			42	34¼ s.	35	8		
143	66⅝ f.	104	6			6	68¾ f.	72	10		
24	9¾	15	6¼			139	34⅝	36	10		
36	36½	57	4			1	87⅞	92	10		
109	9⅝	14	4½			5	78	82	10		
32	59⅞	94	4			3½" PITCH.					
31	47½	73	4⅝			83	43⅝ s.	39	14		
7	81½	128	6			3	46⅝ s.	42	14		Bore 14" in hal's.
56	24⅞ f.	38	6			76	47⅝	43	14		" 12" "
46	39½	62	6			2	53⅝	48	17		" 14" "
9	72⅝	114	4		16" Bore.	4	41⅝	37	17		
2¼" PITCH.						64	19¾	18	10		
29	68	95	5			86	44¼	40	10		In halves.
59	28	39	5			4" PITCH.					
2½" PITCH.											
63	20	25	8		Bore 8" in halves.						
25	60⅞ f.	76	8								
68	16	20	8								
80	14 f.	18	7								
69	13	16	8		Long tooth.						
30	47¾	60	6								
28	35⅝	45	8								
41	32⅝	41	7								

CLASS TWELFTH.—*Continued.*

LIST OF PATTERNS OF GEAR WHEELS, PULLEYS, PEDESTALS, &c.

MITRE WHEELS.

NO. OF PATTERN.	DIAM-ETER.	COGS.	FACE.	PITCH.	PRICE.	NO. OF PATTERN.	DIAM-ETER.	COGS.	FACE.	PITCH.	PRICE.
	Inches.		Inches.	Inches.			Inches.		Inches.	Inches.	
38	5 $\frac{7}{8}$	28	1 $\frac{1}{4}$	$\frac{5}{8}$		10	13 $\frac{1}{16}$	25	5	1 $\frac{3}{4}$	
36	30	85	2 $\frac{1}{4}$	1 $\frac{1}{8}$		5	12 $\frac{3}{16}$	34	2 $\frac{1}{2}$	1 $\frac{1}{8}$	
41	3 $\frac{1}{2}$	20	1 $\frac{1}{4}$	$\frac{9}{16}$ s.		31	34 $\frac{3}{16}$	31	8	3 $\frac{1}{2}$	
16	7 $\frac{5}{8}$ s.	20	2 $\frac{3}{4}$	1 $\frac{1}{8}$		30	27 $\frac{7}{8}$	25	8	3 $\frac{1}{2}$	
17	3 $\frac{3}{8}$	18	1 $\frac{5}{16}$	$\frac{5}{8}$		29	30	24	11	3 $\frac{7}{8}$	
1	26	24	8	3 $\frac{4}{10}$							

RACKS.

No.	FACE.	PITCH.	PRICE.	No.	FACE.	PITCH.	PRICE.
	Inches.	Inches.			Inches.	Inches.	
1	1 $\frac{1}{4}$	$\frac{3}{4}$		4	3	1 $\frac{1}{2}$	
2	1 $\frac{1}{2}$	1		5	2 $\frac{1}{2}$	$\frac{3}{4}$	
3	2 $\frac{1}{2}$	1					

HANGERS.

SIZE.	DROP.	PRICE.	SIZE.	DROP.	PRICE.
Inches.	Inches.		Inches.	Inches.	
1	8		2 $\frac{1}{16}$	20	
1 $\frac{7}{16}$	10		3 $\frac{7}{16}$	20	
1 $\frac{15}{16}$	16		5	30	
2 $\frac{7}{16}$	16				

PULLEYS.

DIAM.	FACE.	PRICE.	DIAM.	FACE.	PRICE.	DIAM.	FACE.	PRICE.
In.	In.		In.	In.		In.	In.	
24	7 $\frac{1}{4}$		17 $\frac{1}{4}$	6		10 $\frac{5}{8}$	1 $\frac{1}{2}$	
16 $\frac{1}{2}$	4 $\frac{1}{4}$		12	4		7	1 $\frac{3}{4}$	
9	4 $\frac{1}{2}$		10	7 $\frac{1}{2}$		18	4	
15 $\frac{1}{2}$	3 $\frac{1}{2}$		30	9		10 $\frac{1}{2}$	2 $\frac{1}{2}$	
9 $\frac{1}{2}$	6		36	12		11 $\frac{1}{2}$	2 $\frac{1}{2}$	
24	9 $\frac{1}{2}$		5 $\frac{3}{4}$	1 $\frac{1}{2}$		24	7 $\frac{1}{8}$ f	
14 $\frac{1}{2}$	5		4 $\frac{1}{2}$	1				

PEDESTALS.

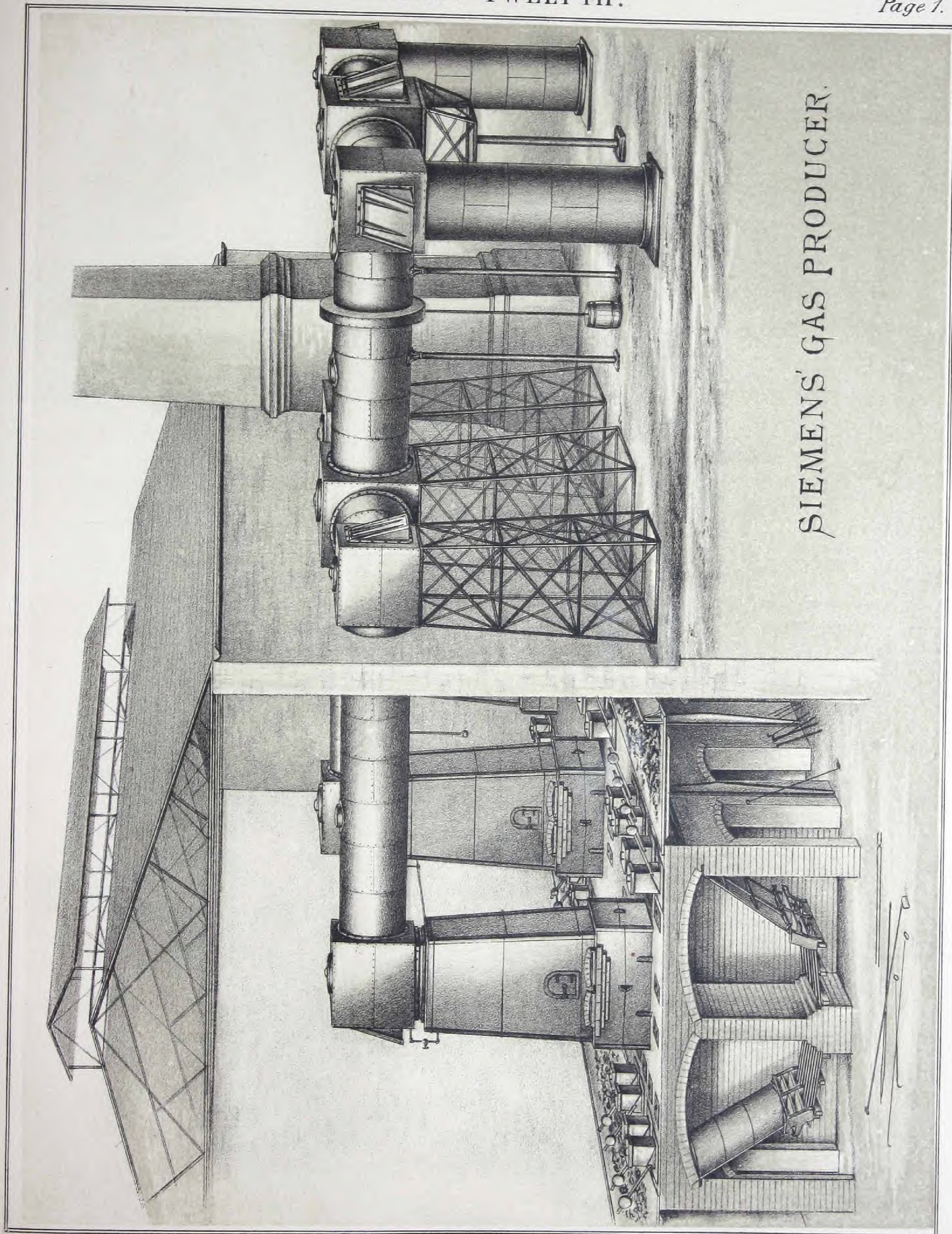
SIZE.	PRICE.	SIZE.	PRICE.
Inches.		Inches.	
2		7	
2 $\frac{1}{2}$		8	
3		9	
4		10	
5		12	
6			

CONE PULLEYS.

DIAMETER.	FACE.	PRICE.	DIAMETER.	FACE.	PRICE.
Inches.	In.		Inches.	In.	
12 x 15 x 18	4 $\frac{1}{8}$		16 $\frac{1}{2}$ x 14 $\frac{1}{2}$ x 12 $\frac{1}{2}$	7 $\frac{1}{2}$	
8 $\frac{1}{2}$ x 7 $\frac{1}{8}$	3		10 x 8 x 6	1 $\frac{3}{4}$	
16 $\frac{1}{2}$ x 20 $\frac{1}{2}$ x 24 $\frac{1}{2}$	4 $\frac{1}{4}$		2 $\frac{1}{2}$ x 3 $\frac{1}{2}$ x 4 $\frac{1}{2}$ x 6	1 $\frac{5}{8}$	
29 x 25 x 21	4 $\frac{1}{4}$		12 $\frac{1}{2}$ x 10 $\frac{1}{2}$ x 8 $\frac{1}{2}$ x 6	2 $\frac{1}{2}$	
15 x 17 x 19 $\frac{1}{2}$	3 $\frac{1}{4}$		15 $\frac{1}{2}$ x 10 $\frac{1}{4}$ x 5 $\frac{1}{2}$	2 $\frac{1}{2}$	
16 $\frac{1}{4}$ x 13 $\frac{1}{4}$ x 10 $\frac{1}{4}$	4 $\frac{1}{8}$		8 x 6 x 4	1 $\frac{7}{8}$	
14 $\frac{1}{2}$ x 11	3 $\frac{1}{4}$		12 $\frac{3}{8}$ x 11 $\frac{1}{2}$ x 10 $\frac{1}{2}$	1 $\frac{1}{2}$	

COUPLINGS.

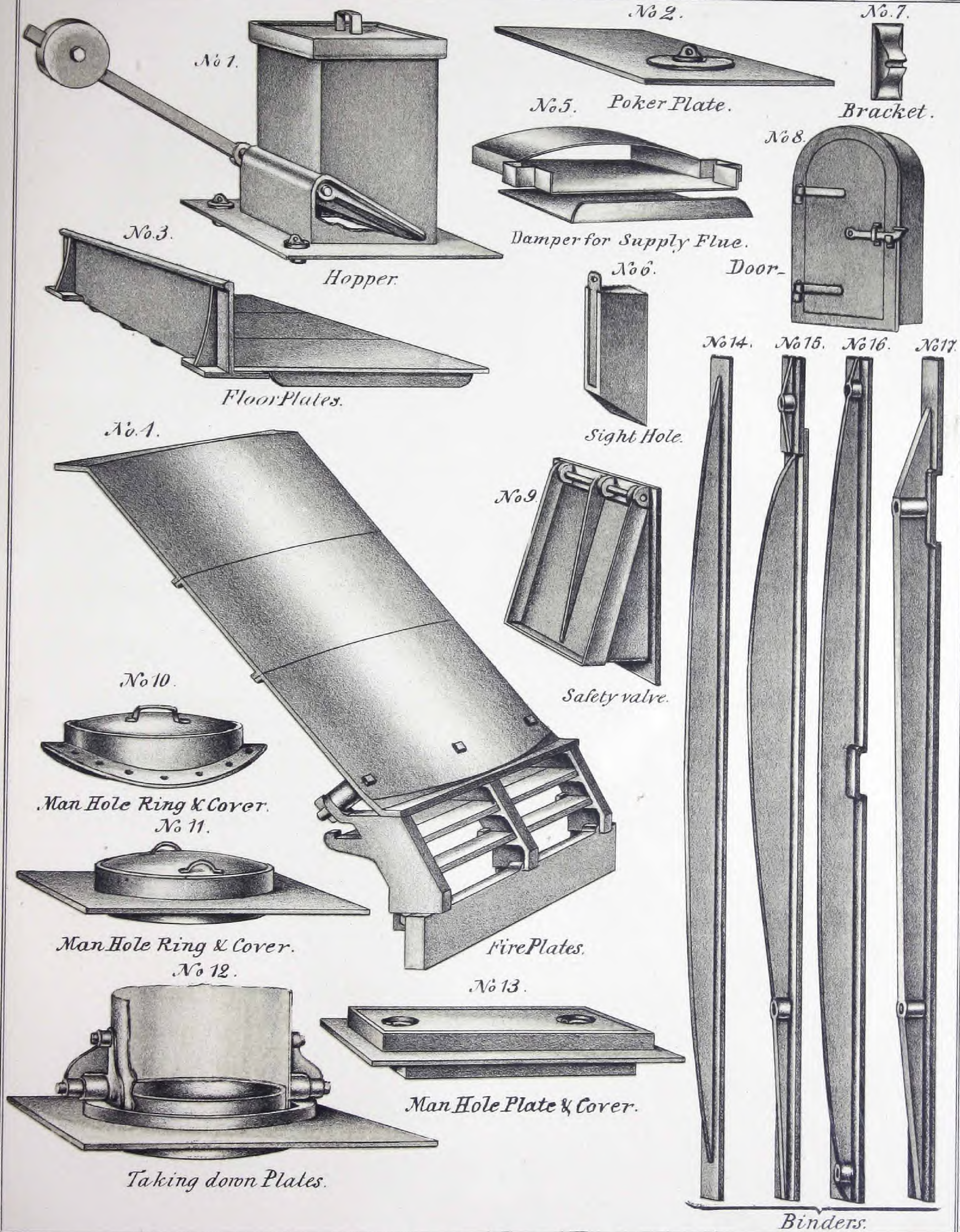
SIZE.	PRICE.	SIZE.	PRICE.
Inches.		Inches.	
1 $\frac{1}{16}$		5	
2 $\frac{7}{16}$		6	
2 $\frac{1}{16}$		7	
3 $\frac{7}{16}$		8	
3 $\frac{1}{16}$		9	
4 $\frac{7}{16}$			





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Plate 2.

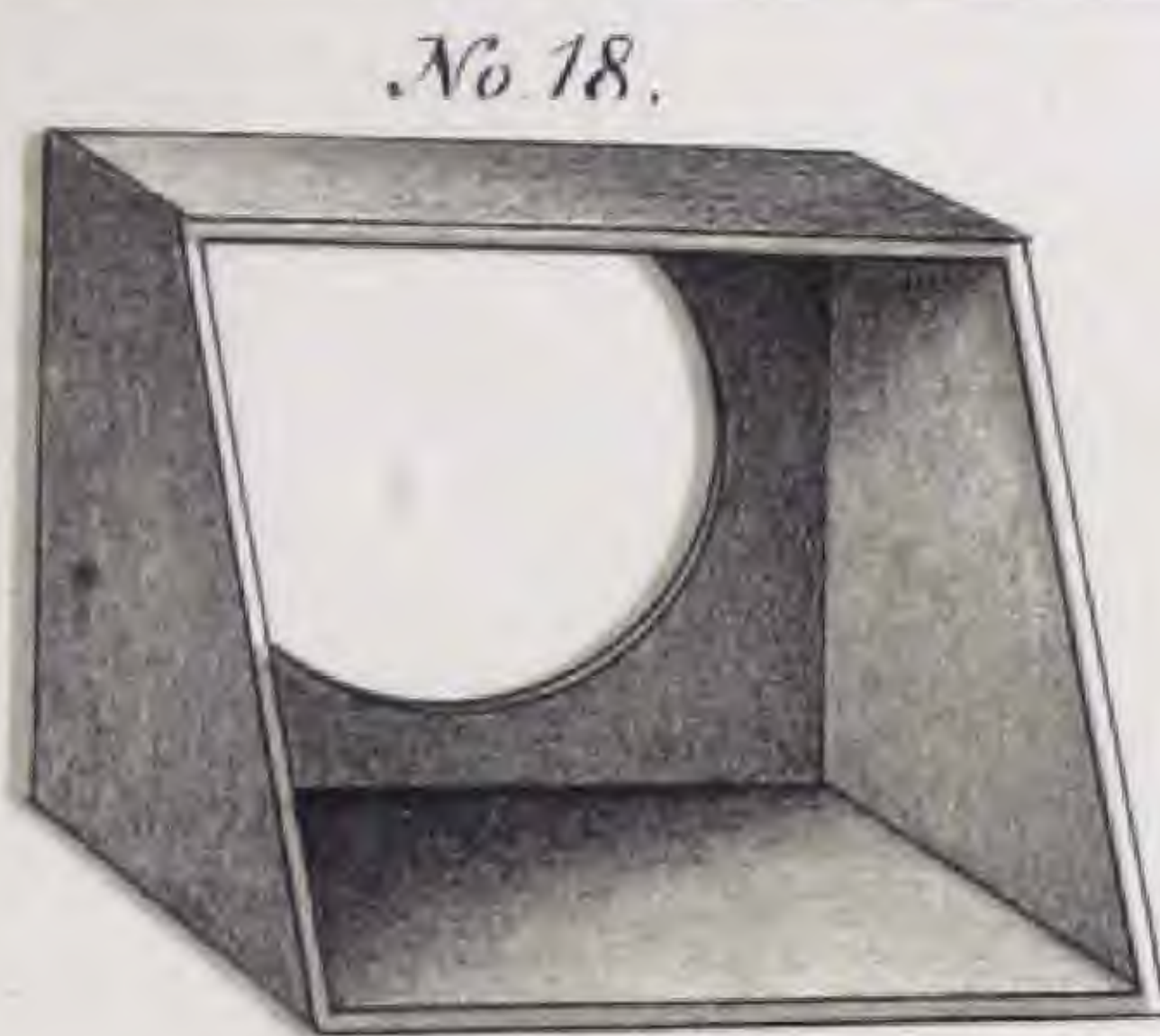


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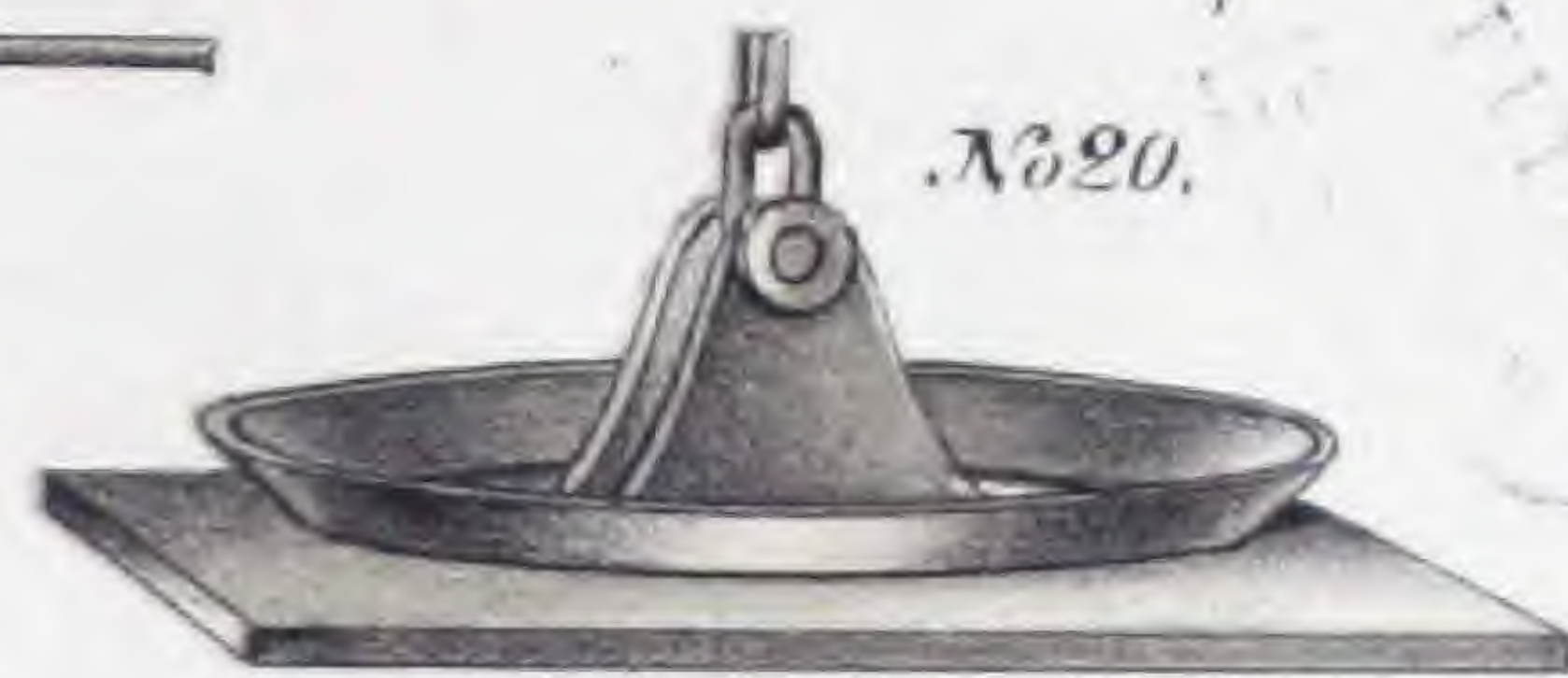
1st Edition.

CLASS TWELFTH.

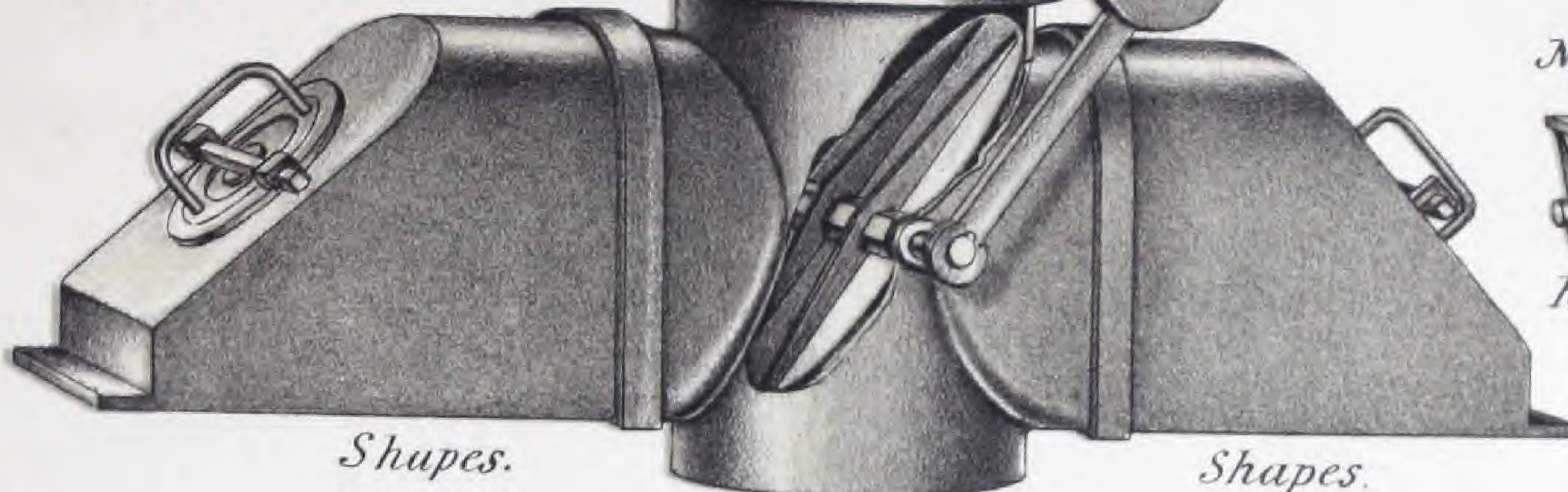
Plate 3.



Wall Box.



Damper for Chimney Flue.



Shapes.

Shapes.

Valve.

No. 21.



Roller.

No. 35.



No. 22.



No. 23.



No. 24.



No. 25.



No. 26.



No. 26a.



No. 27.



No. 28.



No. 29.



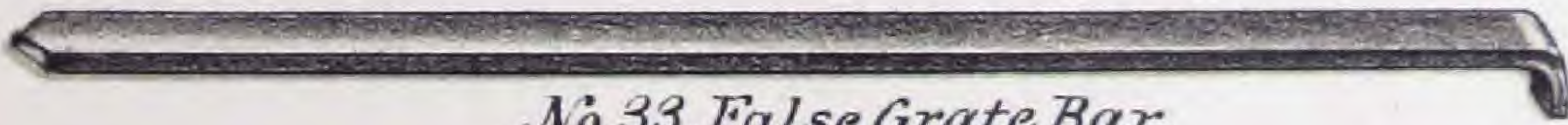
No. 30.



No. 31.



No. 32. Grate Bar.



No. 33. False Grate Bar.



No. 38.

Roller Plate.



No. 36.

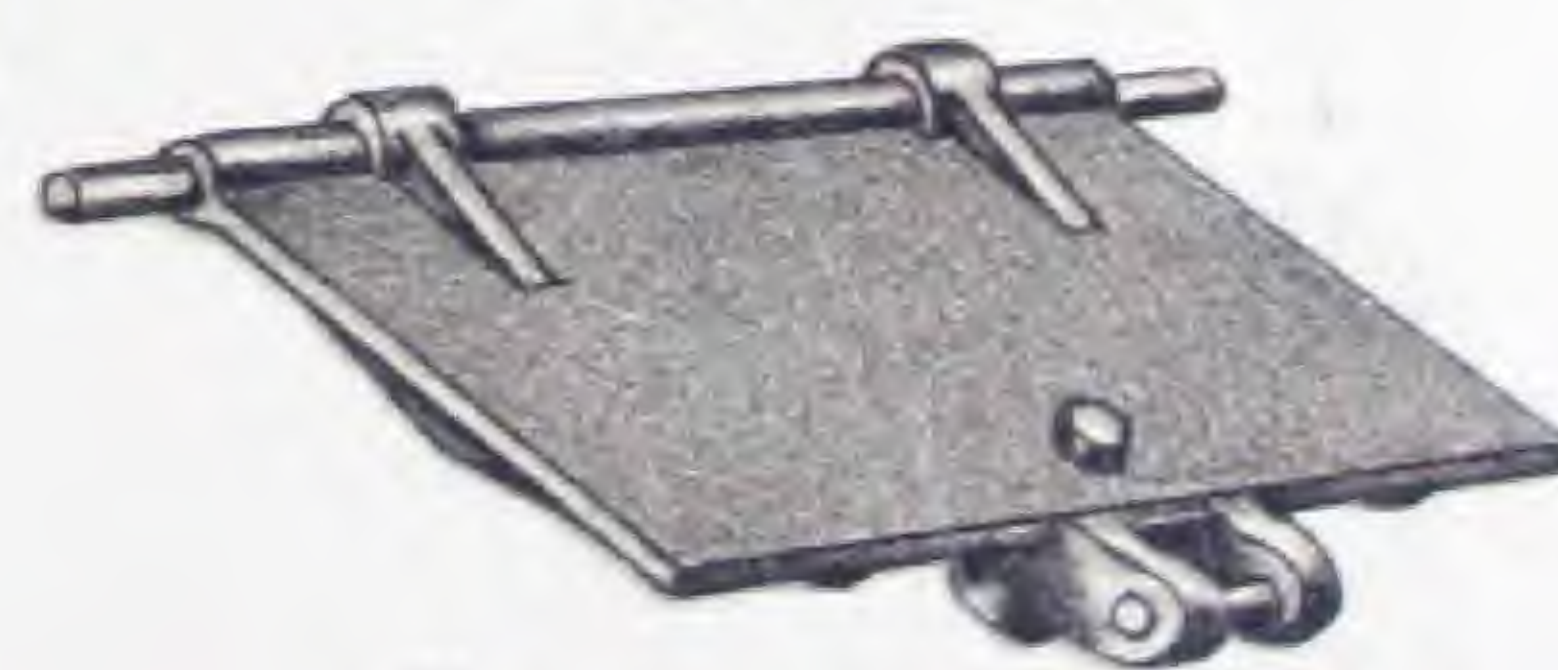


No. 37.

Draft Damper Column.

Air or Gas Valve Column.

Floor Column.



No. 39.

Regulating Damper.



No. 34.

Keystone.



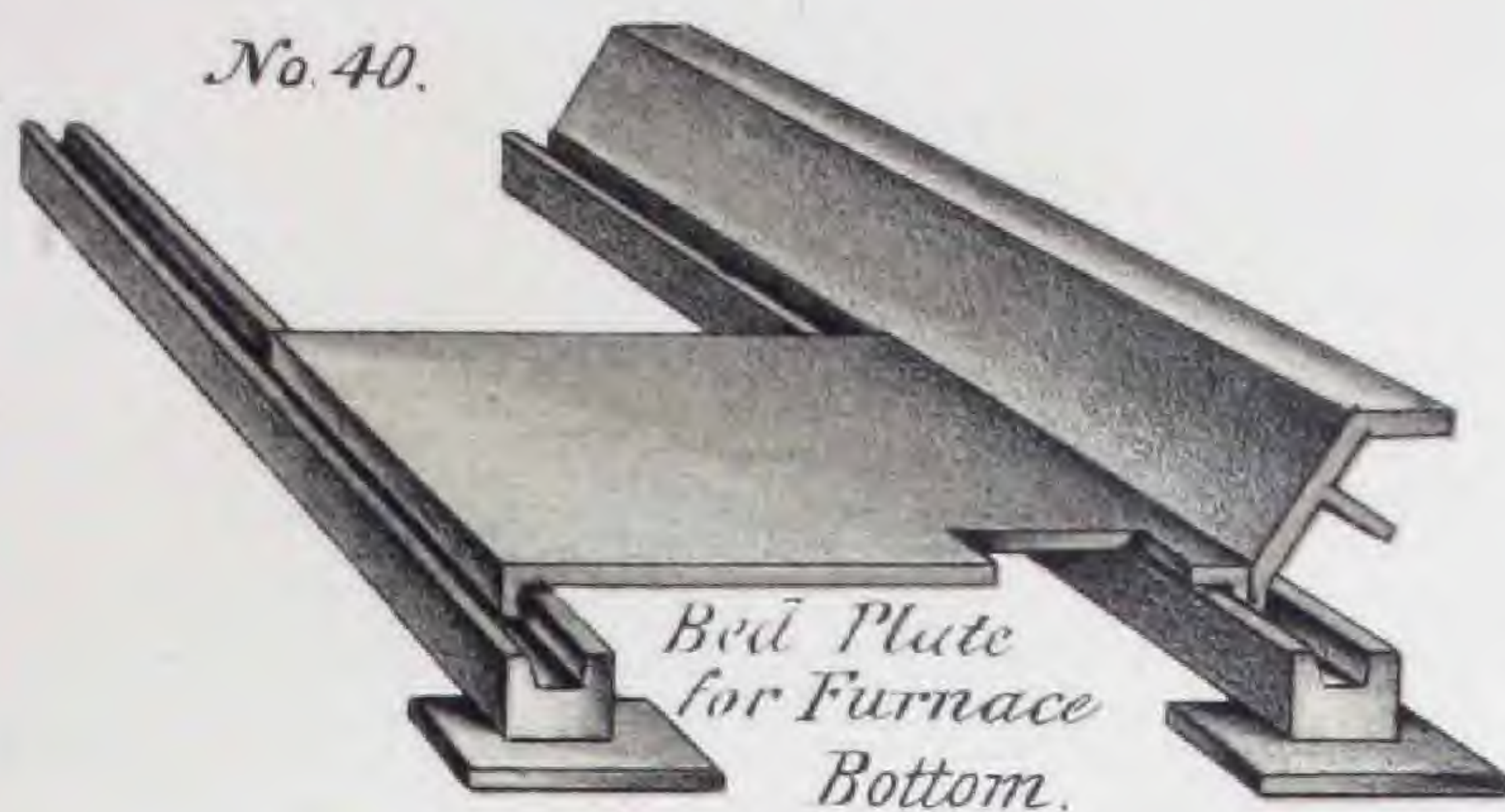
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CLASS TWELFTH.

Plate 4.

No. 40.



Bed Plate
for Furnace
Bottom.

No. 44.



No. 45.

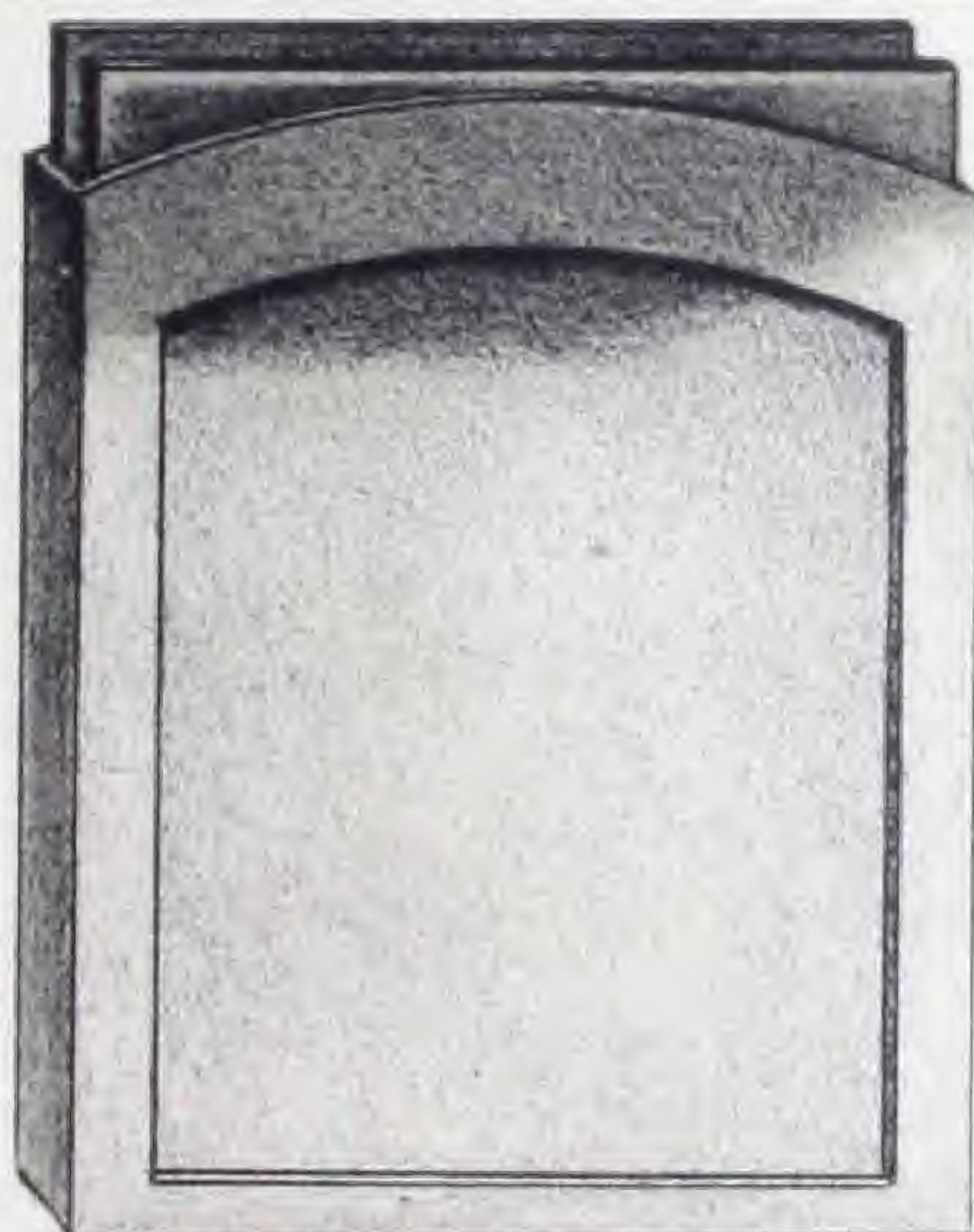


No. 46.

Floor Plates.



No. 53.
Damper
for Cut off



No. 52.



Floor Plate.

No. 41.



Fore Plate.

No. 47.



Truss Bracket.

No. 48.



Chain Wheel.

No. 49.



Tie Rod Bracket.

No. 42.



Corner Binder.

No. 43.



Beam for Floor.

No. 50.



Floor Plates.

No. 51.



No. 54.

No. 55.



Tie Rods.

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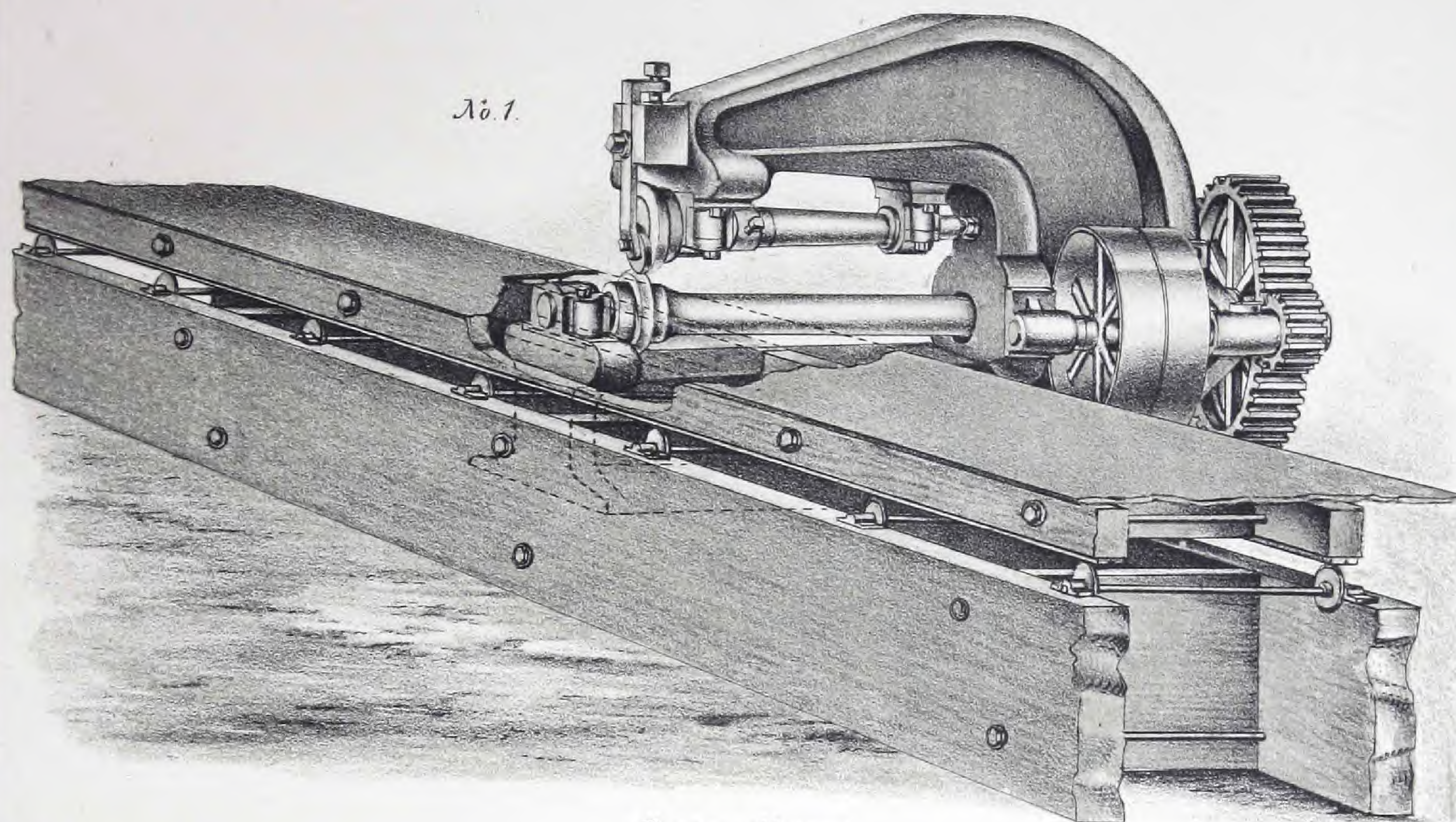
CCA

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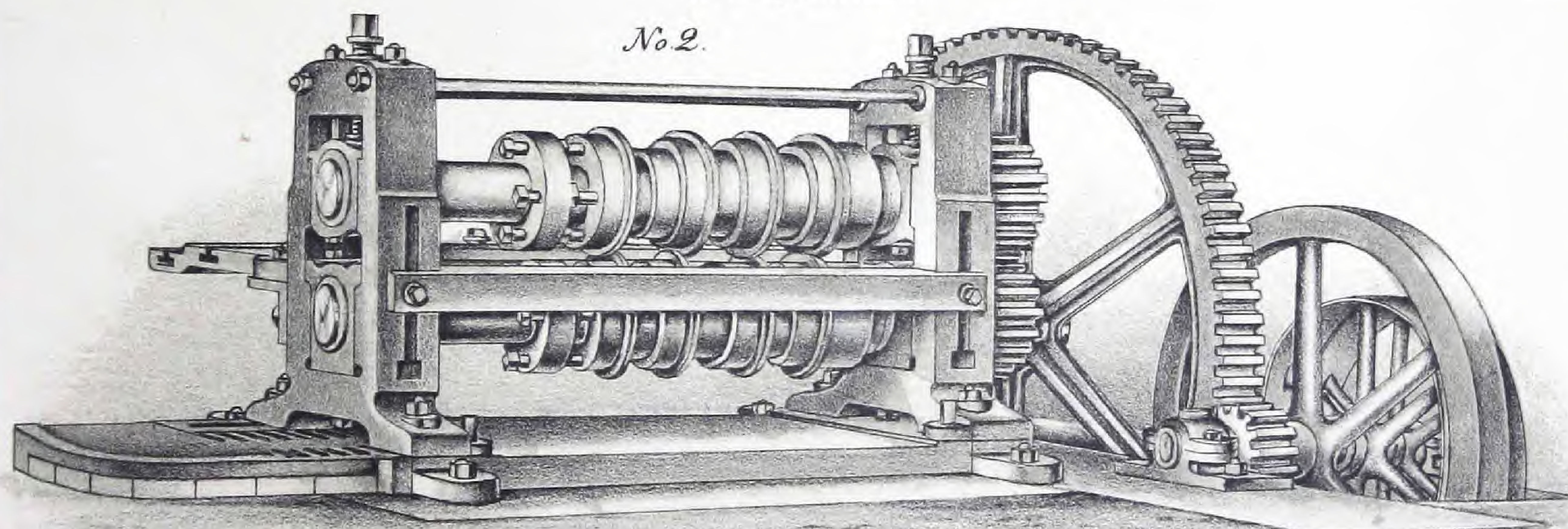
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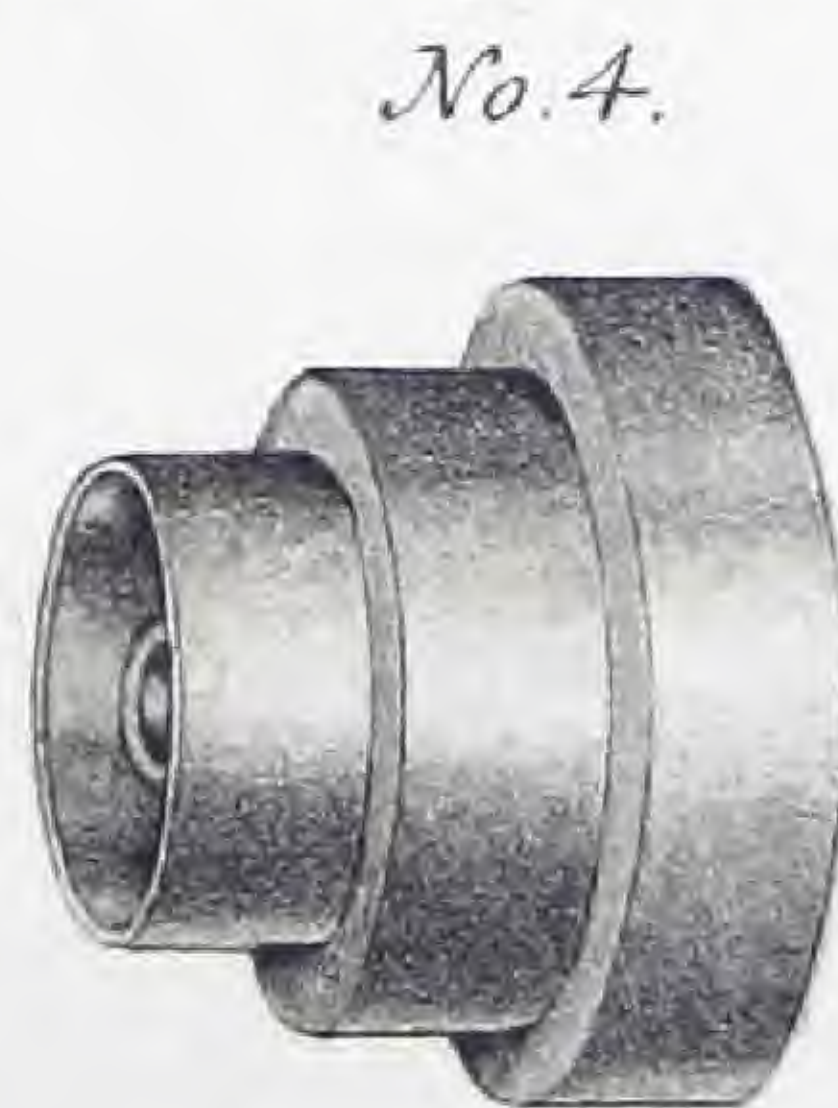
Plate 5.



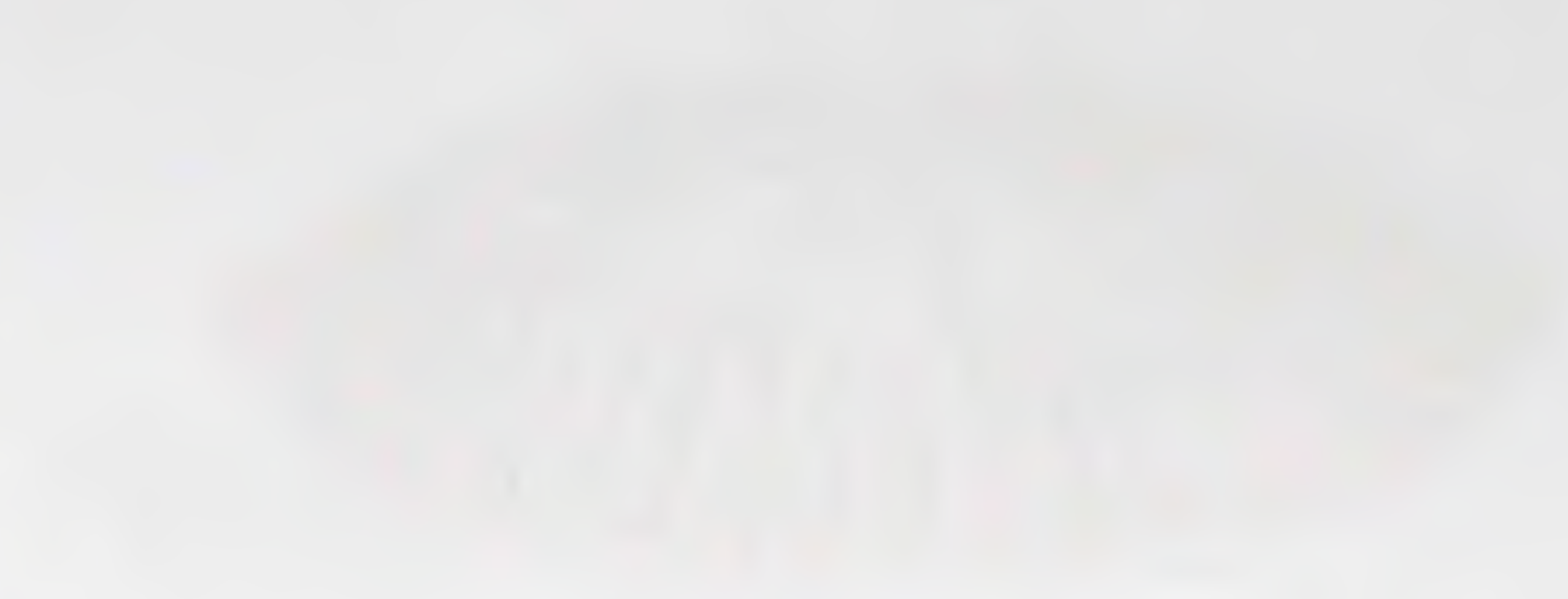
Rotary Shears.



Pat. Adjustable Slitting Shears.



Cone Pulleys.



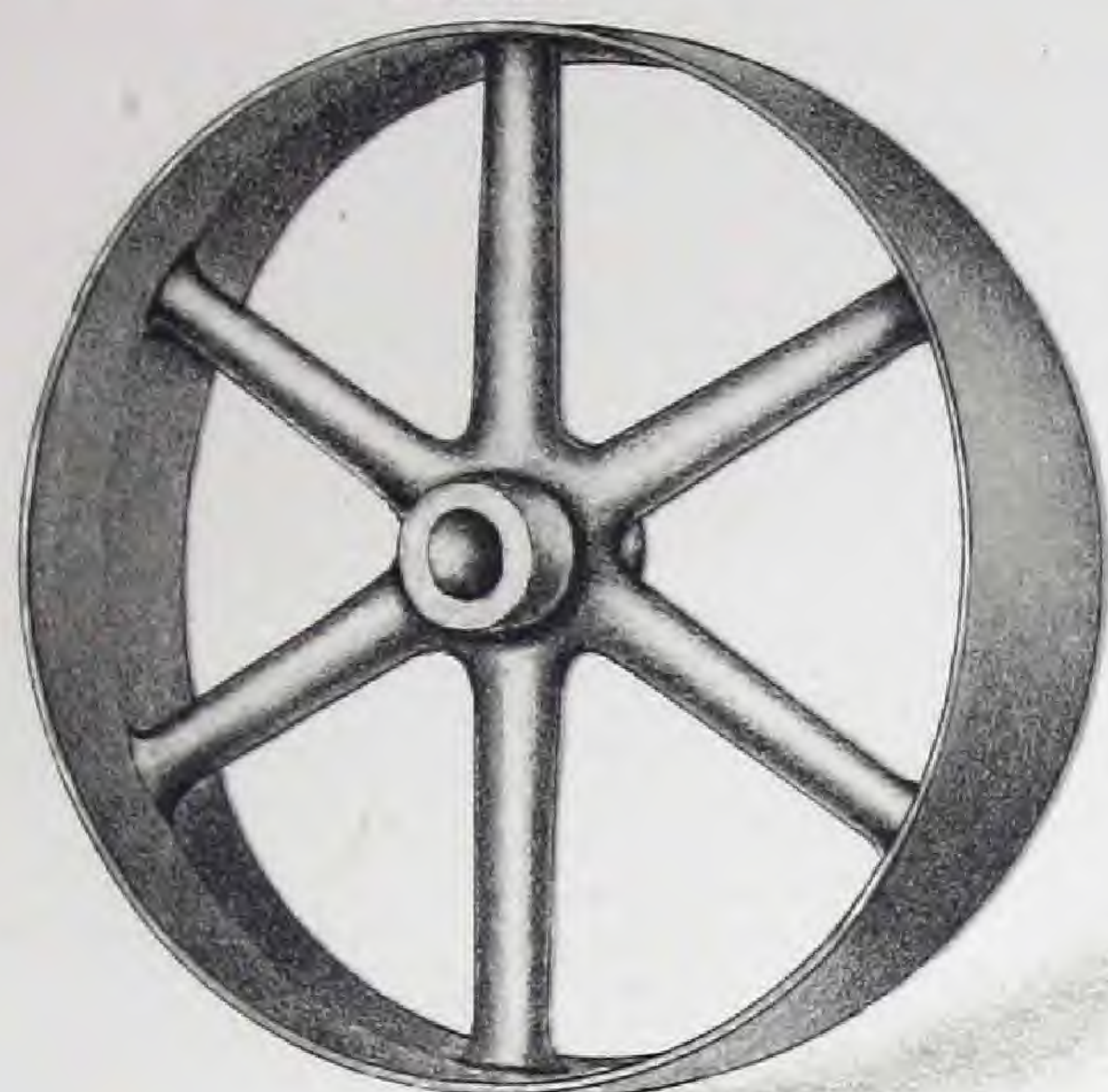
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CLASS TWELFTH.

Plate 6.

No. 6.



Pulley.

No. 8.



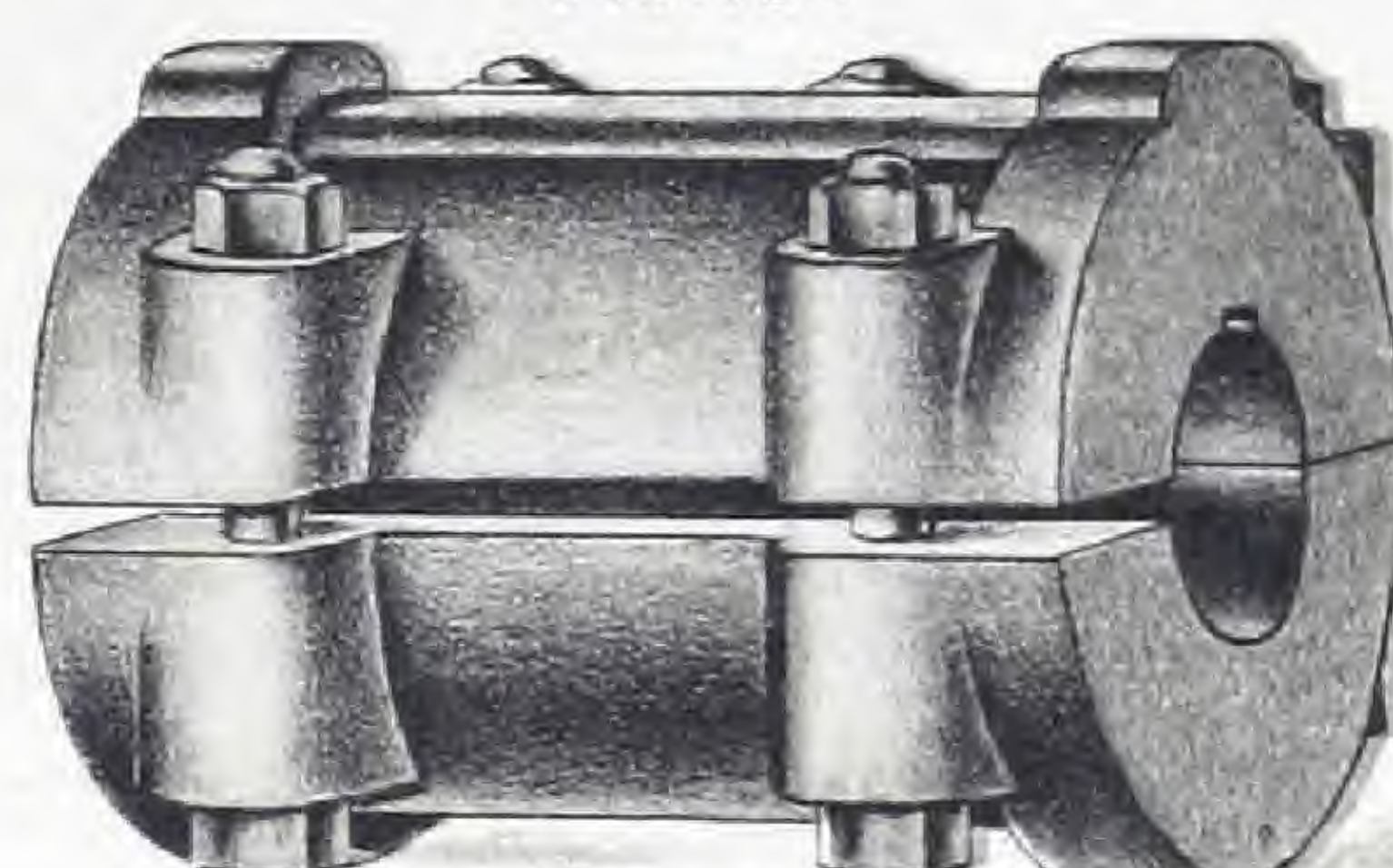
Bevil or Mitre Wheel.

No. 9.



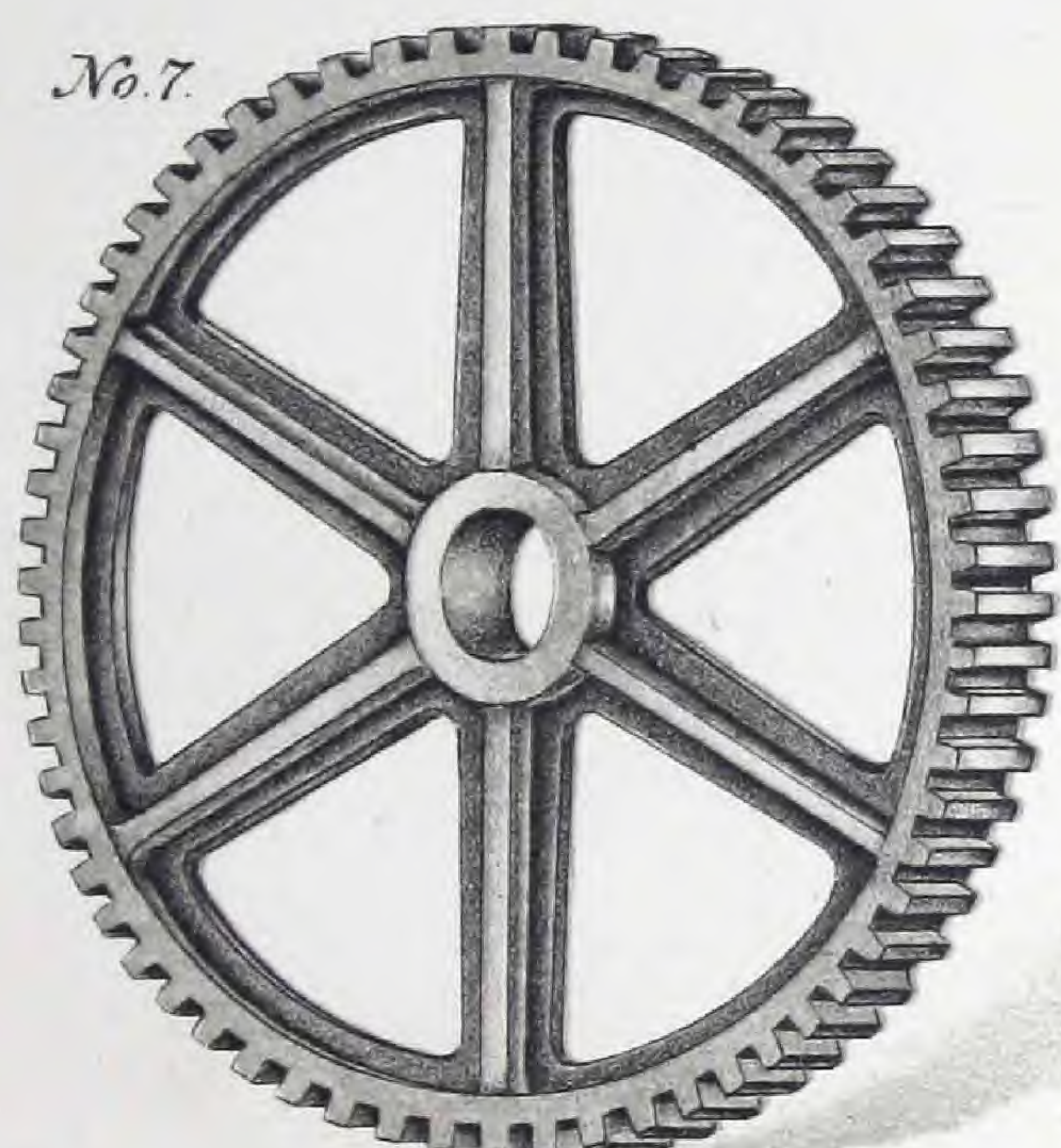
Rack.

No. 10.



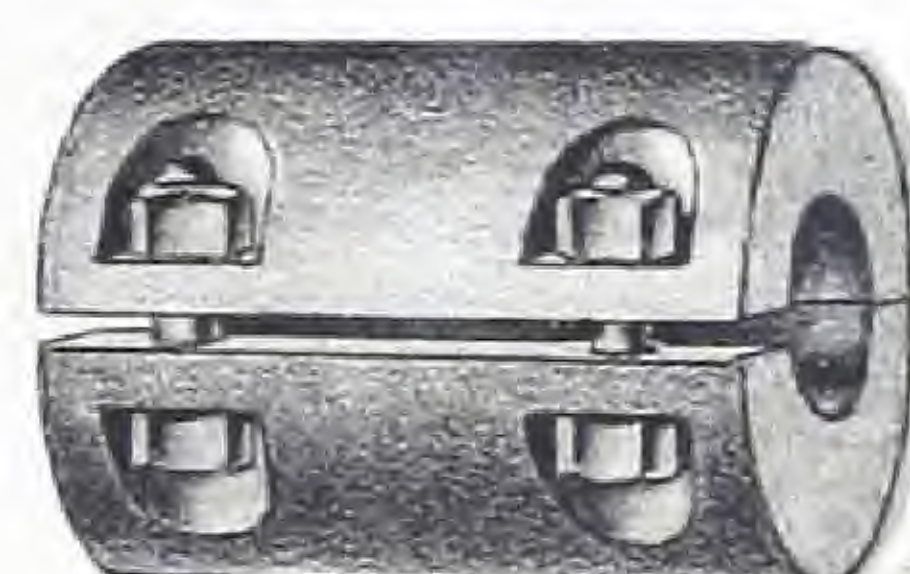
Coupling.

No. 7.



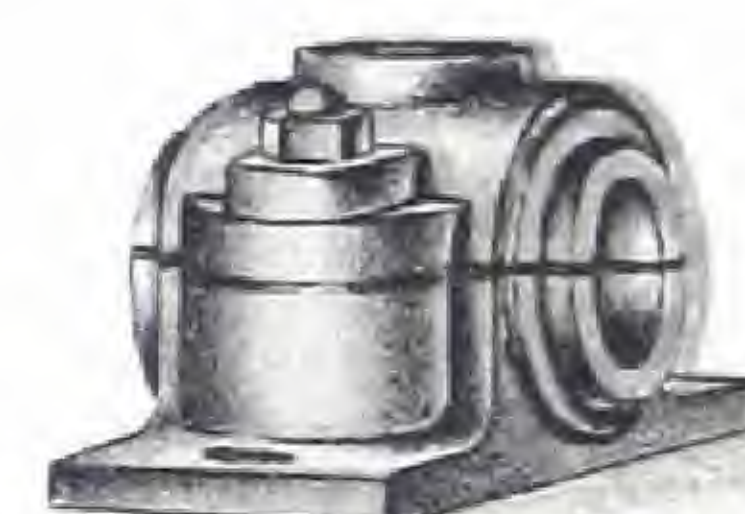
Gear Wheel.

No. 11.



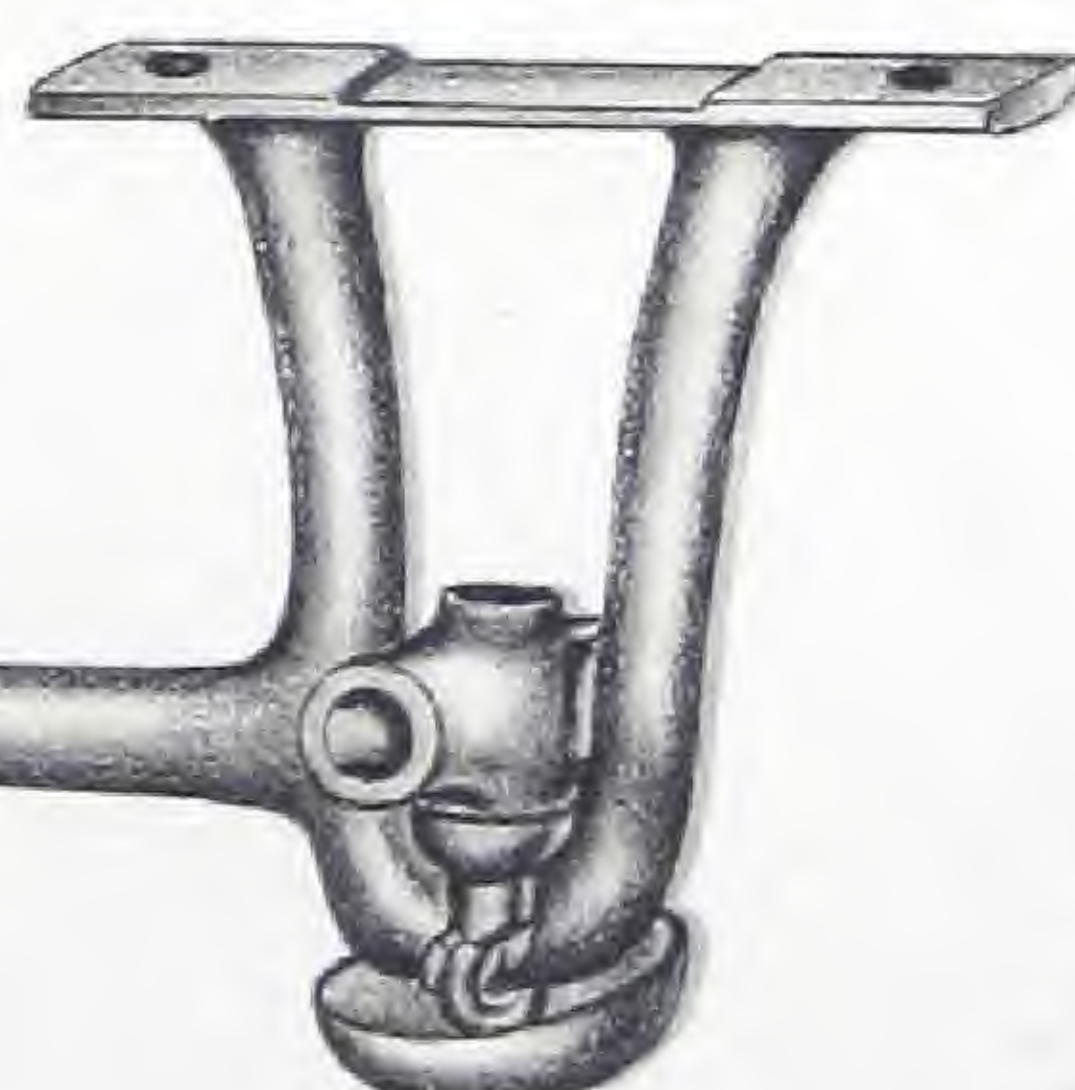
Coupling.

No. 12.



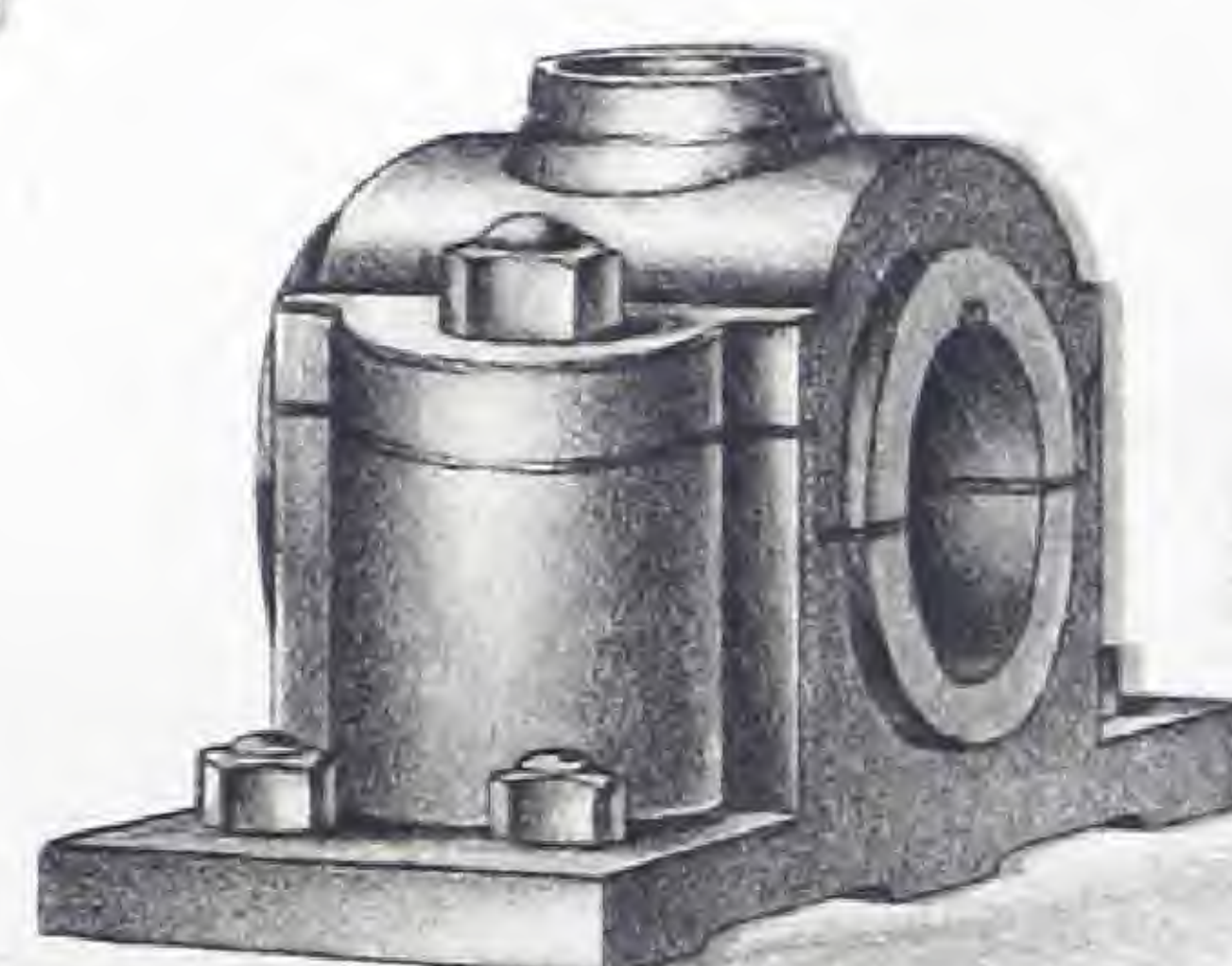
Pedestal.

No. 15.



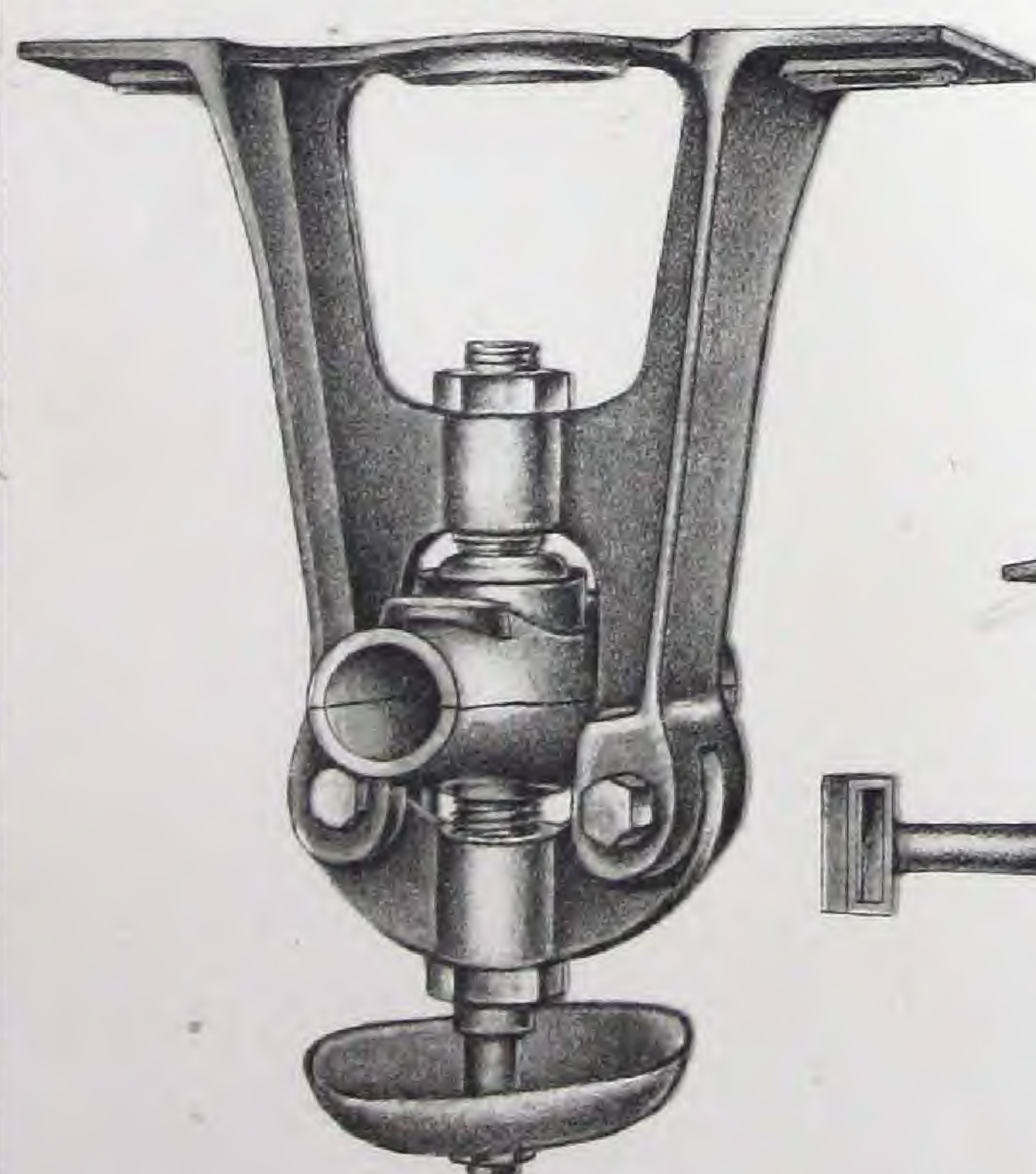
Hanger.

No. 13.



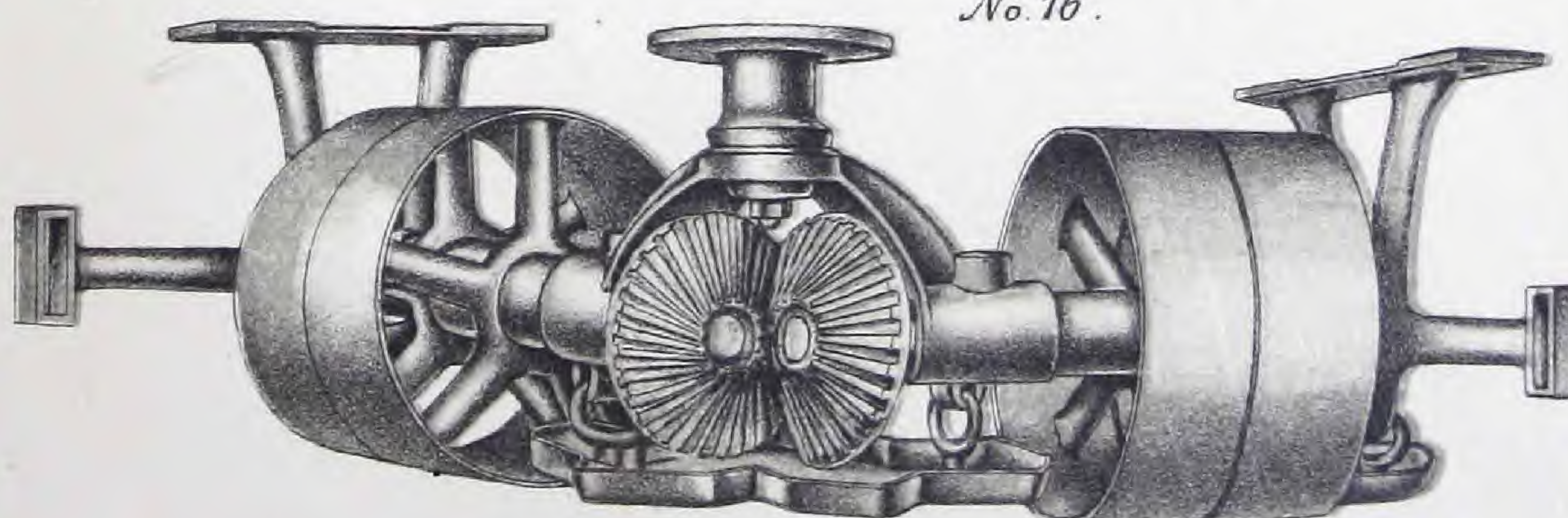
Pedestal.

No. 14.



Hanger.

No. 16.



Portable Angle Counter Shaft.

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